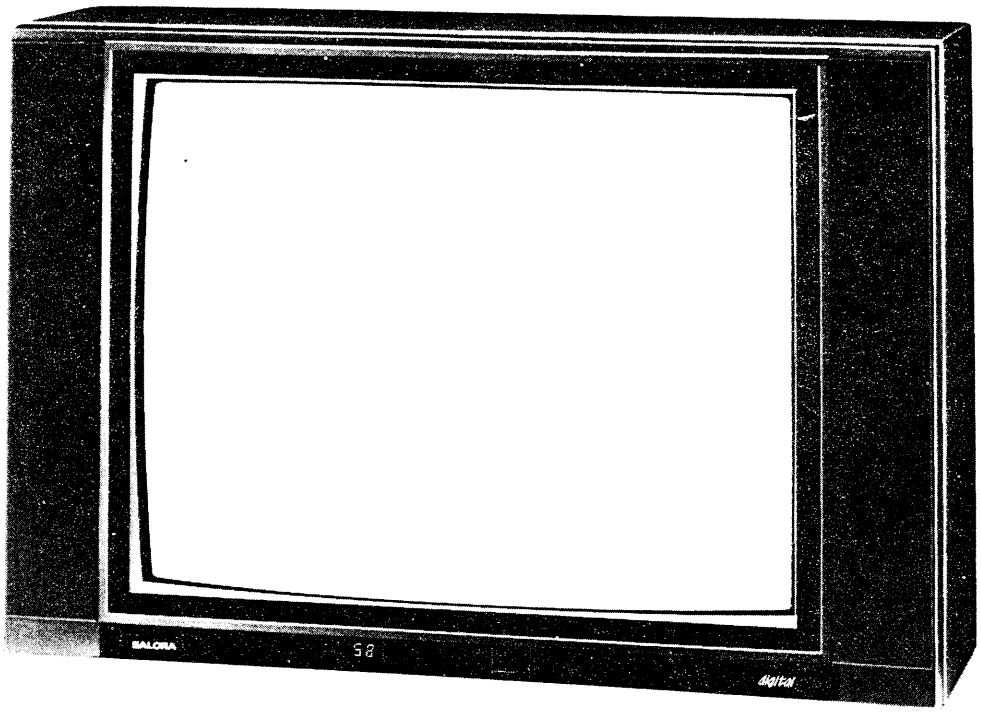
SALORA
HUOLTO·SERVICE

M COLOUR TELEVISION

SERVICE MANUAL
21M87 25M87 28M87



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SPARE PART LISTS (SP)

P.C.B. LAYOUTS

CIRCUIT DIAGRAM

ZB1357 04.89

1 GENERAL

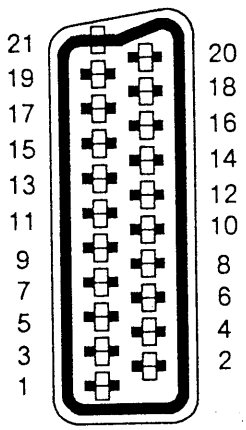
1.1 Technical Data

TV system	625 lines		
Standard	PAL I		
Channel coverage	VHF I 2 - S1	51 - 108 MHz	
	VHF III S2 - S20 ..	115 - 297 MHz	
	UHF 21- 68	474 - 850 MHz	
Intermediate frequencies			
Sound IF	33.5 MHz		
Vision IF	39.5 MHz		
Chroma IF	4.43 MHz		
Aerial connection	75/60 Ohm IEC 169-2 DIN 45325 VHF/UHF		
Mains voltage	220 - 240 V 50Hz +/- 10%		

	21M87	25M87	28M87
Picture tube	55	63	71 cm
	90°	110° ...	110°
Power consumption (for normal viewing)	63	79	79 W
Weight, approx.	24	29	37 kg
Dimensions **W**	65	72	78 cm
H	43	48	52,5 cm
D	38.5	4.5	45.5 cm
Modules **STH**	180	187	187
SCS	400	400	400
STB	260	258	258
STEJ	46	46	46 (Standard models)
STEJ	50	50	50 (NICAM models)
STEQ ...	01	01	01
SK	062	062	062
STUL ...	60	60	60

CONNECTIONS

Specification of SCART connector (EXT 1 & EXT 2)



1	Sound 1 output, stereo channel right 0.5 V rms *
2	Sound 1 input, stereo channel right 0.5 V rms
3	Sound 2 output, stereo channel left 0.5 V rms *
4	Earth (sound)
5	RGB blue earth
6	Sound 2 input, stereo channel left 0.5 V rms
7	RGB blue input (B) **
8	Switch voltage video. RC-5 control
9	RGB green earth
10	N.C.
11	RGB green input (G) **
12	N.C.
13	RGB red earth
14	Data earth (N.C.)
15	RGB red input (R) **
16	RGB Blanking **
17	Earth (video)
18	Earth (blanking)
19	Video output 1 V_{pp}/75 ohm *
20	Video input 1 V_{pp}/75 ohm, or sync input 0.3 V_{pp}
21	Screen earth
*	In the EXT 2 connector via a satellite tuner only
**	Not used in the EXT 2 connector

1.2 Module Codes

STB .. Mother Board
STH .. Picture tube base panel
SCS .. Control unit
STEJ . Audio module
STEQ . Audio submodule
SK ... Tuner
STUL Remote control transmitter

In addition, the components on the mother board STB... are grouped according to their function as follows:

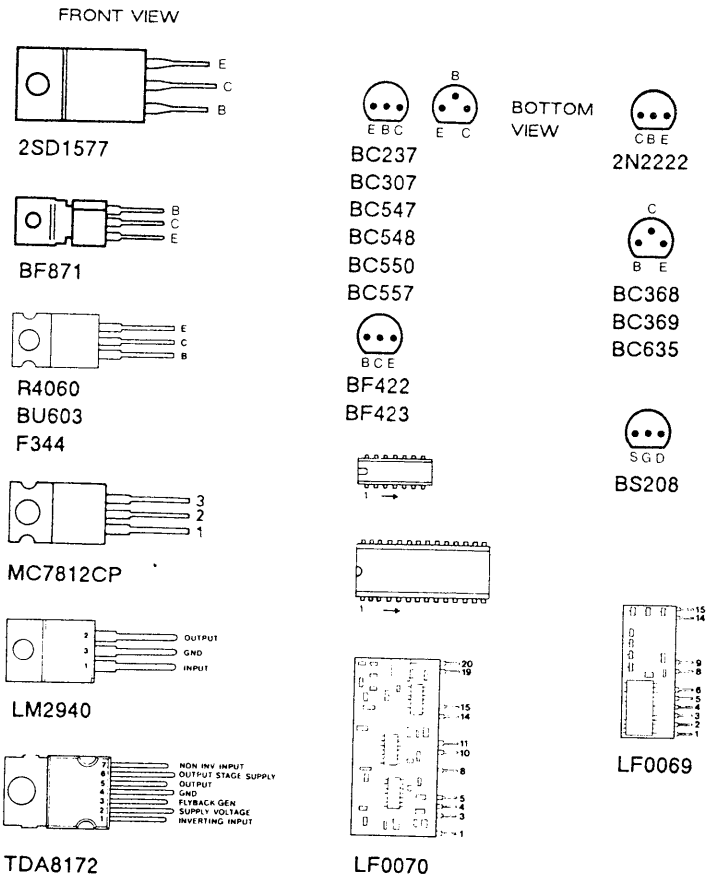
500 .. Deflection section
600 .. Power section, mains isolated
700 .. Power section, mains non-isolated

1.3 Component References:

R Resistor
C Capacitor
H Hybrid
T Transistor
D Diode
M Transformer
L Coil or choke
F Fuse
DT Diac

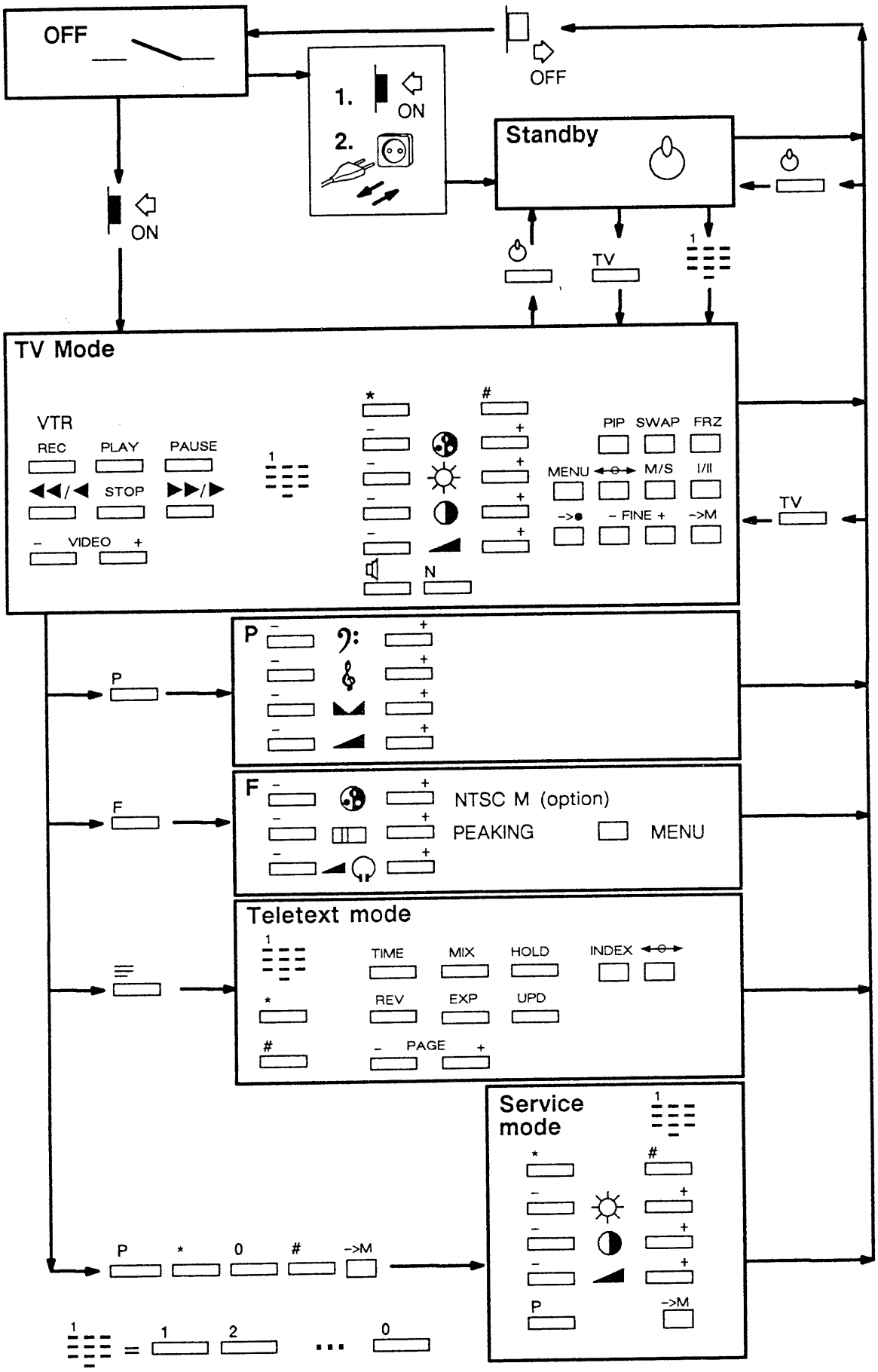
RT Trimmer potentiometer
CT Trimmer capacitor
IC Integrated circuit
DL Delay line
TU Tuner
XL Crystal
CF Ceramic filter
SS Mains switch
SAF Surface acoustic wave filter

1.4 Semiconductors

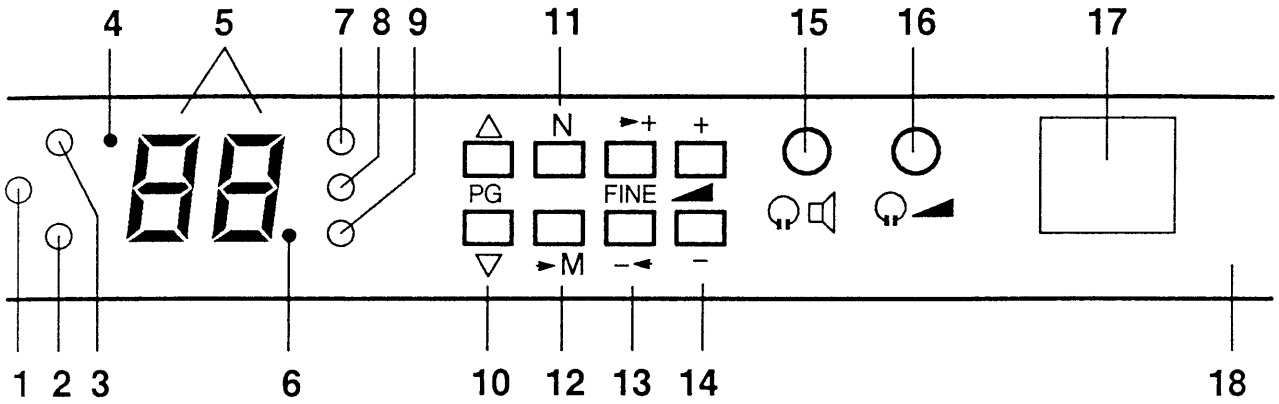


2 FUNCTIONS

2.1 Transmitter



2.2 Control Panel



1 Satellite channel recording indicator (optional extra)
2 Satellite channel indicator(optional extra)
3 P mode: Cable TV channel (S channel) indicator
4 P indicator
5 The display window shows
- Programme position
- Letter P or channel number
- Letter F

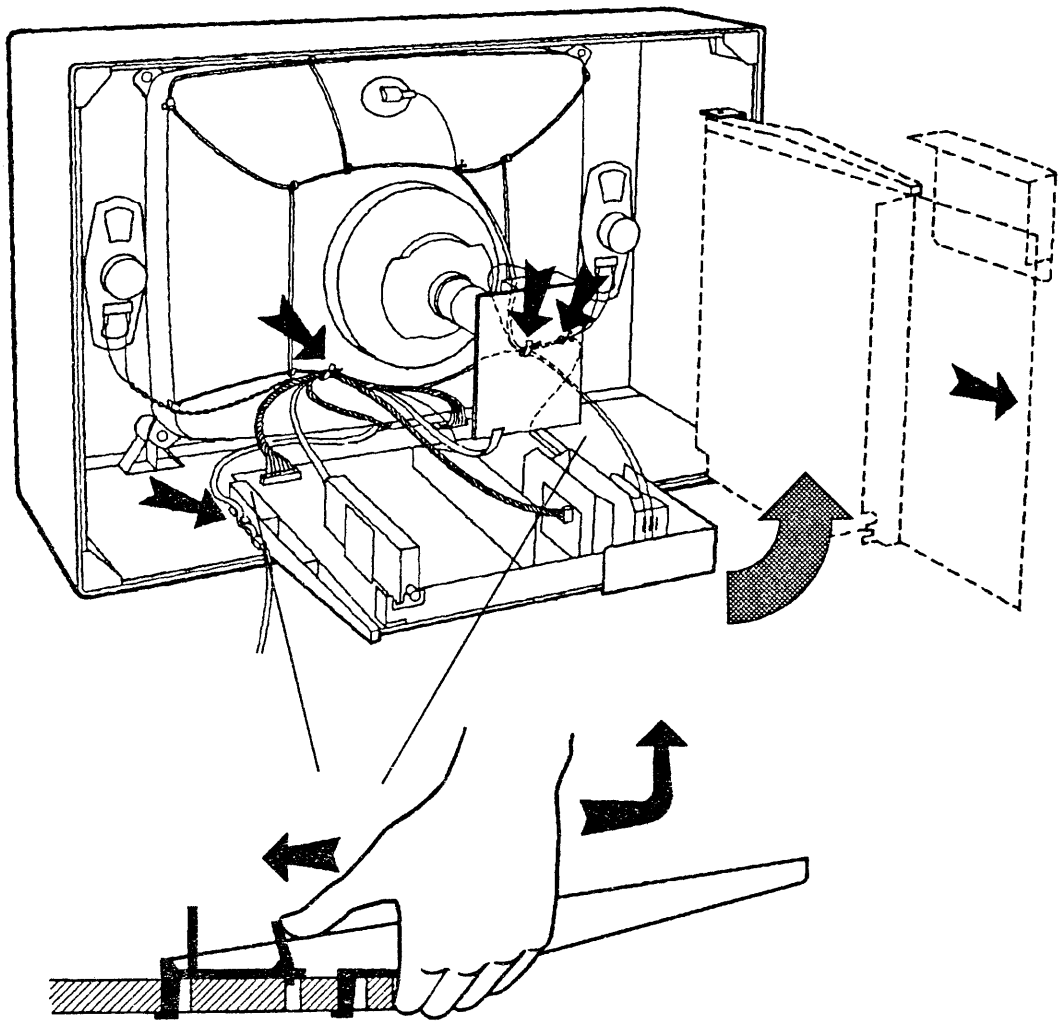
6 Mute indicator
7 Sound I/Stereo indicator
8 The indicator shows
- Simulated stereo/wide stereo
- P mode: Loudness
- F mode: Colour transient improvement (DTI)

9 Sound II/Stereo indicator
10 Programme position stepping up/down
11 Normalisation
12 Store
13 Fine tuning +/–
14 Sound volume adjustment
15 Headphone socket
A headphone channel parallel with speakers
16 Headphone socket
Separately adjustable headphone channel
17 Mains switch ON OFF
18 Remote control receiver

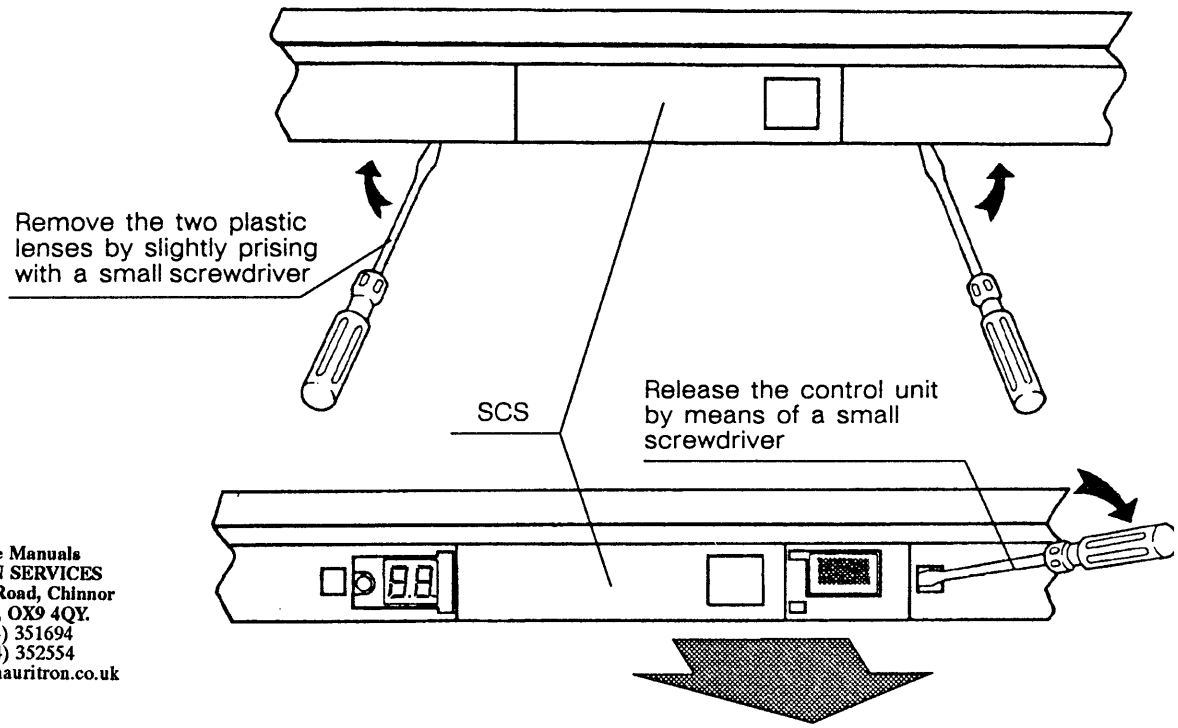
3 OPENING INSTRUCTIONS

3.1 Service Position of the Chassis

- To move the chassis into service position open the cable fasteners shown by the arrows.
- Release the chassis by pressing the clamps and then pulling it as shown below.
- The chassis may be placed on the clamps provided at the bottom and at the right-hand side of the cabinet. IMPORTANT: Ensure cables are correctly redressed after refitting the chassis.



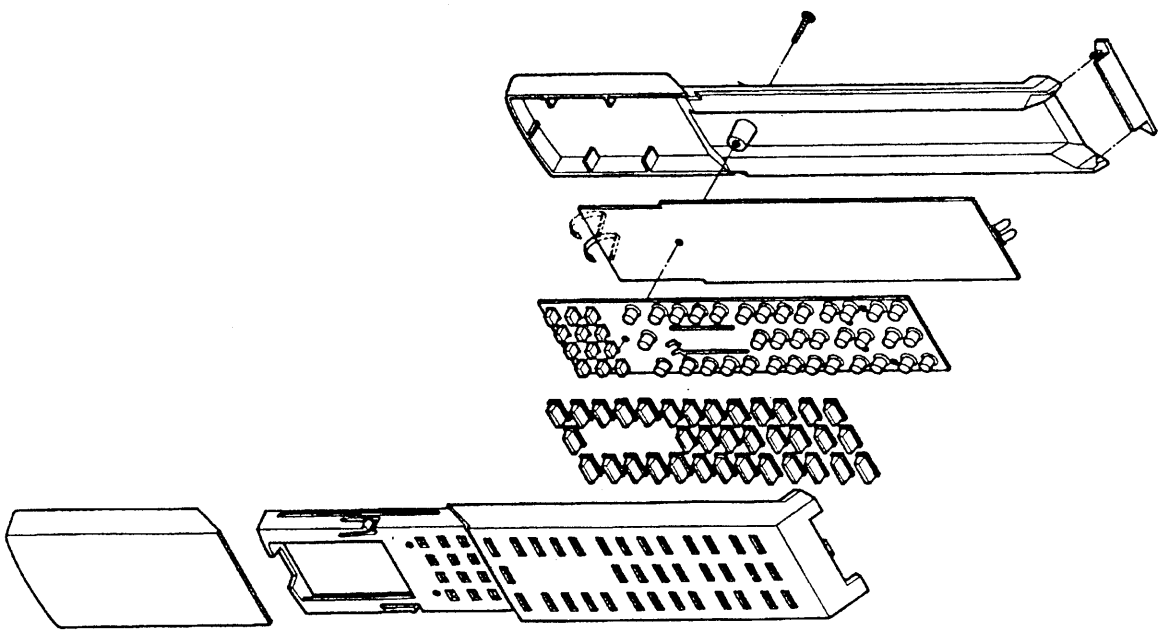
3.2 Releasing the Control Unit

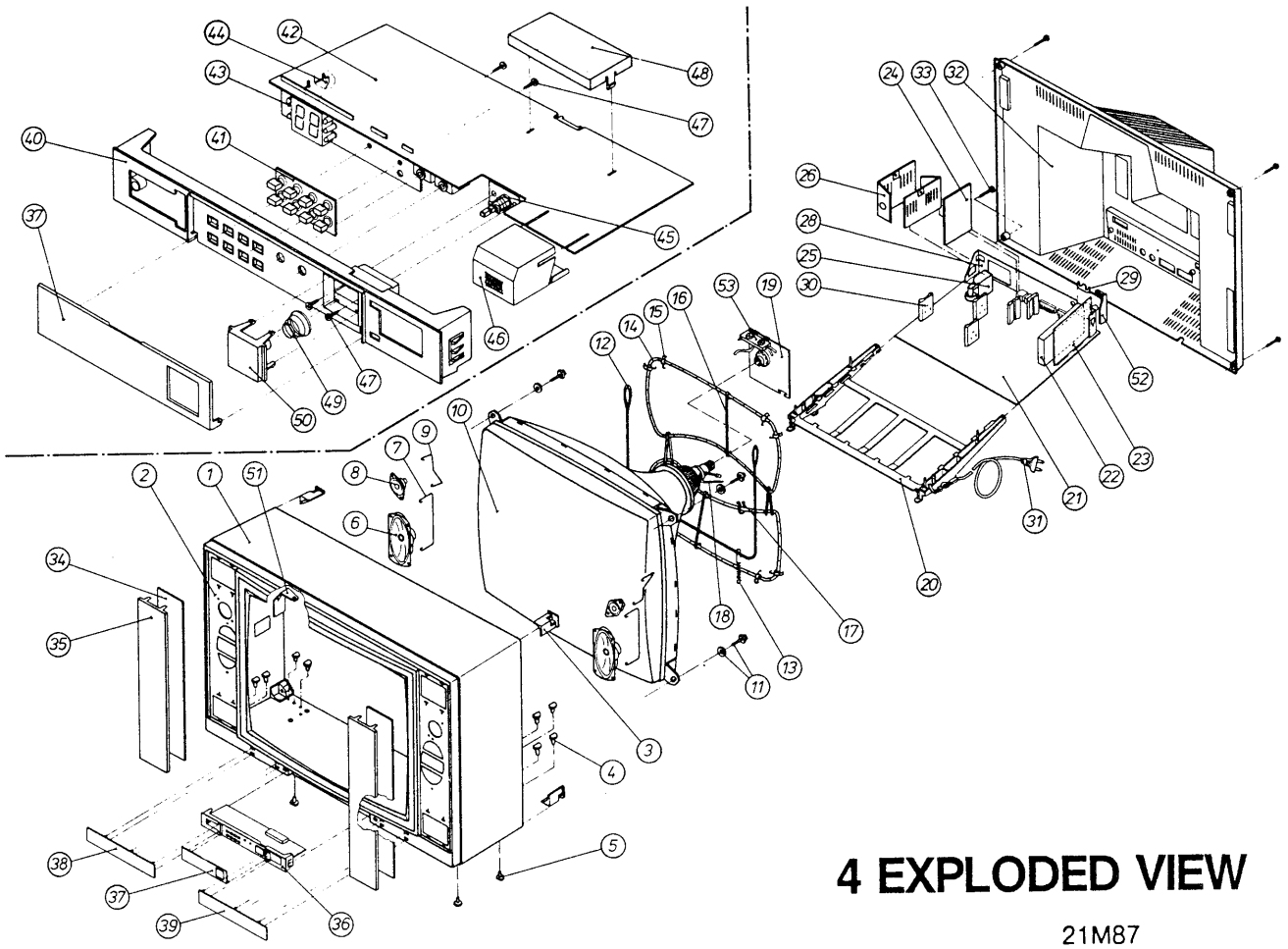

Remove the two plastic lenses by slightly prising with a small screwdriver
SCS
Release the control unit by means of a small screwdriver

For Service Manuals
MAURITRON SERVICES
8 Cherry Tree Road, Chinnor
Oxfordshire, OX9 4QY.
Tel (01844) 351694
Fax (01844) 352554
email:- sales@mauritron.co.uk

3.3 Transmitter

- Open the lid of the battery compartment. Remove the battery.
- Unscrew the fastening screw from the bottom of the unit.
- Lift the bottom off the handset with the buttons facing downward.



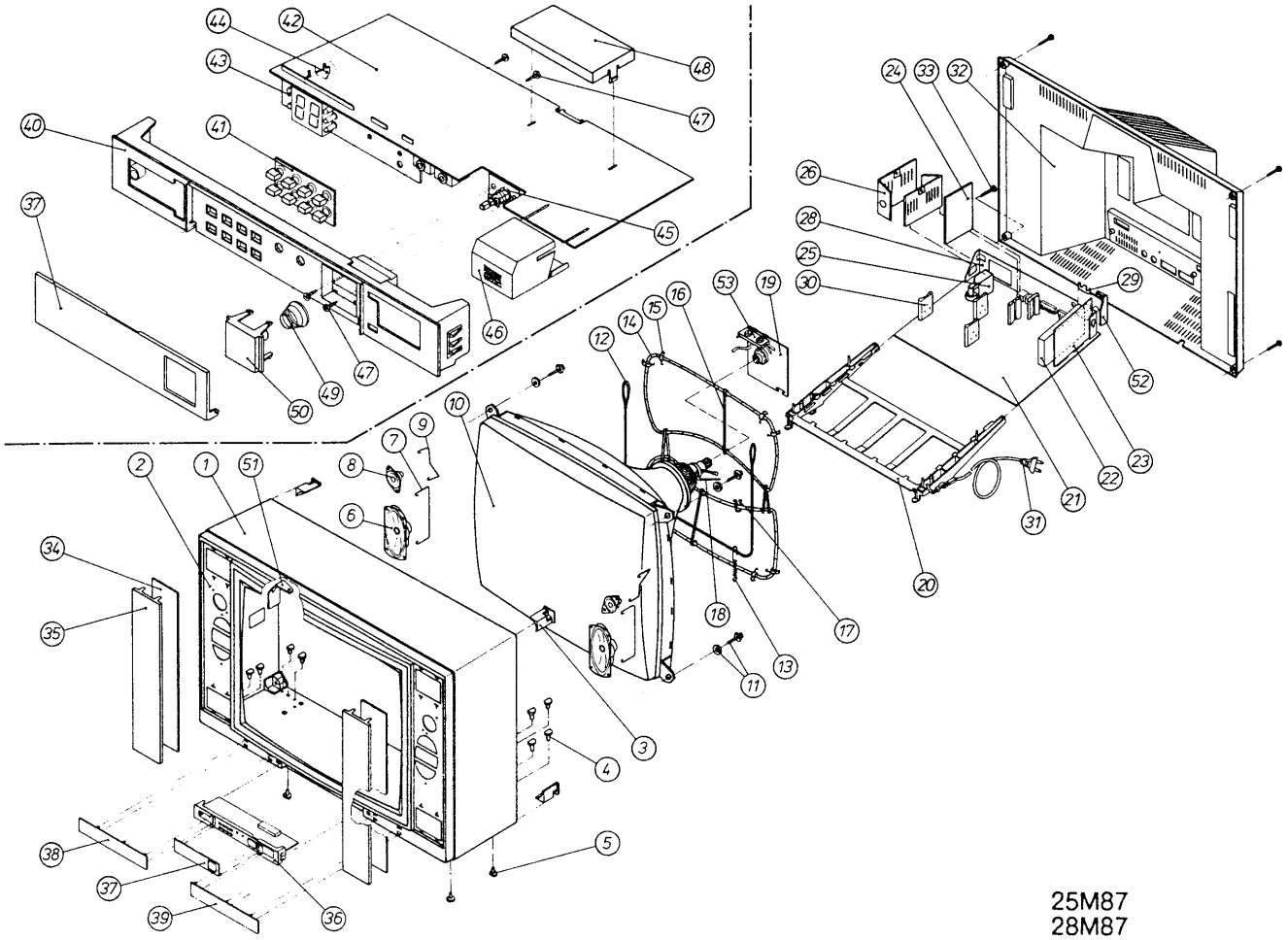


4 EXPLODED VIEW

21M87

No	Code	Description	PG
1	UB3314	Cabinet	38
2	UA3459	Front panel	
3	UG0516	Holder for backcover	04
4	WJ0126	Fastening screw for stand	02
5	UG0499	Plastic knob leg	02
6	QP0115	Loudspeaker	18
7	UC3093	Fastening spring for loudspeaker	05
8	QP0211	Loudspeaker	15
9	UC3118	Holder for loudspeaker	03
10	NM0317	Picture tube	53
11	WC0352	Screw	03
12	SE1522	Grounding braid	09
13	UC3053	Grounding spring for picture tube	04
14	FD0226	Degaussing coil	20
15	UG0150	Fastening hook	02
16	UG0097	Fastening for degaussing coil	02
17	UG0086	Lead lock	02
18	UJ0125	Lead band	01
19	STH180	Tube socket board	29
20	UG0581	Chassis frame	10
21	STB260	Main board	60
22	STT062	All-band tuner amplifier	43
23	STEJ46	FM and sound if module	30
.	STEJ50	Multisound (Nicam) module	53
24	STEQ01	Submodule for tone channel	24
25	FM0513	Diode-split	30
26	UC2491	Heat sink	09

No	Code	Description	PG
28	UC2355	Support	08
29	UG0577	Isolator	02
30	UC2352	Heat sink	04
31	SE1525	Mains cable	15
32	UA1744	Back cover	23
33	WC0354	Screw	01
34	UA1693	Cover for loudspeaker	05
35	UC2301	Metal grill	16
36	SCS400	Control unit	30
37	UA1990	Cover	06
38	UA5310	Lens	06
39	UA5310	Lens	06
40	UA478A	Control panel	10
41	QG0224	Contact plate	05
42	SCS400	Control unit	30
43	SCS400	Control unit	30
44	UC2431	Support	02
45	QG0265	Mains switch	11
46	UC2427	IR-box	03
47	WC0350	Screw	01
48	UG0575	Touch protection	02
49	UC3131	Spring	02
50	UT0991	Push button	04
51	UG0573	Support	05
52	UG0578	Support	03
53	LF0057	Focus unit	10
..	663002A	Handset	99



25M87
28M87

No	Code	Description	PG
1	UB5384	Cabinet M87F	38
..	UB4484	Cabinet M87E	39
2	UA3479	Front panel M87F	
..	UA3469	Front panel M87E	
3	UG0516	Holder for back cover	04
4	WJ0126	Fastening screw for stand	02
5	UG0499	Plastic knob leg	02
6	QP0115	Loudspeaker	18
7	UC3093	Fastening spring for loudspeaker	05
8	QP0211	Loudspeaker	15
9	UC3118	Holder for loudspeaker	03
10	NM0318	Picture tube M87F	56
..	NM0321	Picture tube M87E	56
11	WC0352	Screw	03
12	SE1146	Grounding braid	12
13	UC3053	Grounding spring for picture tube	04
14	FD0266	Degaussing coil M87F	21
..	FD0226	Degaussing coil M87E	20
15	UG0150	Fastening hook	02
16	UG0097	Fastening for degaussing coil	02
17	UG0086	Lead lock	02
18	UJ0125	Lead band	01
19	STH187	Tube socket board	28
20	UG0581	Chassis frame	10
21	STB258	Main board	60
22	STT062	All-band tuner amplifier	43
23	STEJ46	FM and sound if module	30
..	STEJ50	Multisound (Nicam) module	53
24	STEQ01	Submodule for tone channel	24
25	FM0513	Diode-split-	30
26	UC2491	Interfernce shield	09
28	UC2355	Support	08

No	Code	Description	PG
29	UG0577	Isolator	02
30	UC2352	Heat sink	04
31	SE1525	Mains cable	15
32	UA1717	Back cover M87F	24
..	UA1715	Back cover M87E	23
33	WC0354	Screw	01
34	UA1695	Cover for loudspeaker M87F	06
..	UA1694	Cover for loudspeaker M87E	05
35	UC2321	Metal grill M87F	18
..	UC2311	Metal grill M87E	17
36	SCS400	Control unit	30
37	UA1990	Cover	06
38	UA5300	Lens M87F	06
..	UA5290	Lens M87E	06
39	UA5300	Lens M87F	06
..	UA5290	Lens M87E	06
40	UA478A	Body for control panel	10
41	QG0224	Contact plate	05
42	SCS400	Control unit	30
43	SCS400	Control unit	30
44	UC2431	Support	02
45	QG0265	Mains switch	11
46	UC2427	IR-box	03
47	WC0350	Screw	01
48	UG0575	Touch protection	02
49	UC3131	Spring	02
50	UT0991	Push button	04
51	UG0573	Support	05
52	UG0578	Support	03
53	LF0057	Focus unit	10
..	663002A	Handset	99

5 ADJUSTMENT PROCEDURE (CCU – SALO – 07)

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  5.5.3 Digit Display and LED's
5.6 OPTION BYTES

5.1 General

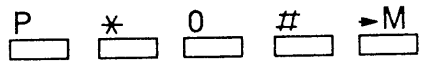
Most of the adjustments in 1M series receivers can be made with a remote control handset. Only focus and G2 adjustments are trimmer potentiometer adjustments.

The receiver's adjustment values are stored in EEPROM. When the memory IC is replaced with an empty one, the IC must be initialized with adjustment values whereby the TV can be started up (see 5.5.1).

5.2 Service Mode

The adjustments are performed in service mode.

Access to the service mode is obtained by keying in the following command



The display shows the processor's mask version.

The time duration between keystrokes should not exceed 10 secs except between the last two 1.5 secs.

The only keys operating in service mode in addition to brightness and contrast controls are

*Forward step in adjustment sequence*

***** *Backward step in adjustment sequence*

P *Return to initial (0) state.* This return does not restore the original adjustment values.

►M
Stores the current adjustment value in the memory. Storage is always necessary before proceeding to the next adjustment. Otherwise the adjusted value will be lost and the previous value will remain in the memory.

TV *Resets to TV mode.* All adjustment values are read from the memory, as when switching on the TV.

VOL + AND VOL –
Adjustment is performed with these keys. The display blinks during adjustment until the minimum or maximum value is reached.

NUMBERS 0 ... 7
Change of state of option bytes. The right-hand digit display shows the state of bits.

5.3 List of Adjustments

The adjustmets are listed below in software-defined sequence. The sequence keys are used to make a forward step or a backward step in the list. The given number cannot be directly used to shift to the desired adjustment but it helps to determine how many times the sequence key has to be depressed.

Adjustment	*No*	*Description*
- 7	0	Initial state (Indicates the processor's mask version)
BP	2	Horizontal centering
dL	3	Luminance delay (DTI 2223)
dC	4	Chrominance delay (DTI 2223)
Y0	5	Picture width
Z0	6	Trapezium distortion correction I
C0	7	Pincushion distortion correction I
K1	8	Summing point 1
Z1	9	Trapezium distortion correction II
C1	10	Pincushion distortion correction II
K2	11	Summing point 2
A0	12	Vertical shift (top border)
H0	13	Picture height (bottom border)
S0	14	Vertical linearity (bottom squares)
S1	15	Vertical symmetry (centre position)
ud	16	Variable delay between chrominance and luminance signals (switch off the DTI i.e., select RF VTR channel)
St	17	DTI start time adjustment
Sp	18	DTI end time adjustment
SA	19	Colour synchronization (VCO)
G2	20	Screen grid voltage adjustment
cr	21	Black level adjustment (red cut-off)
cG	22	Black level adjustment (green cut-off)
cb	23	Black level adjustment (blue cut-off)
dr	24	Highlight adjustment (red gain)
dG	25	Highlight adjustment (green gain)
db	26	Highlight adjustment (blue gain)
HA	27	Teletext horizontal shift
CA	28	Teletext contrast
	29	Option byte 1
	30	Option byte 2
	31	Option byte 3

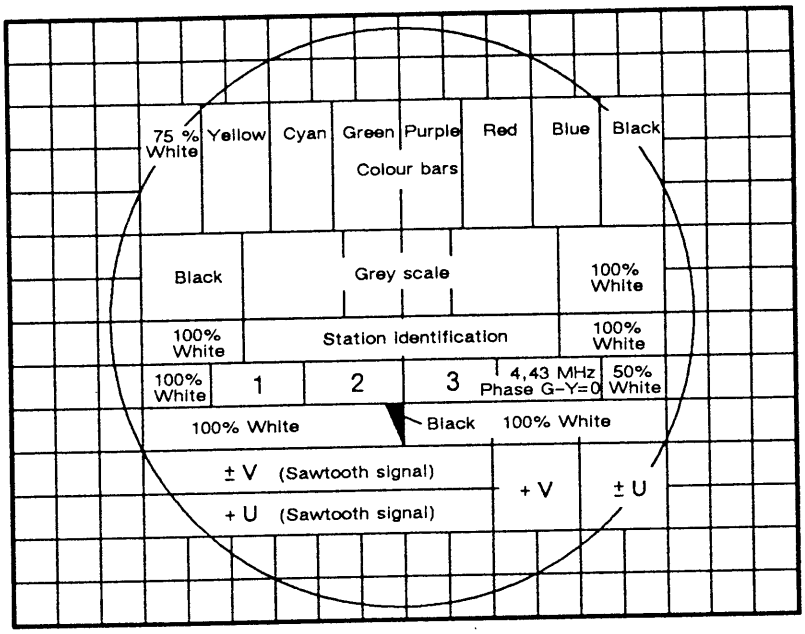


Fig. 1

5.4 Order of Adjustments

The recommended order of adjustments has been found to lead to the required result most quickly. Adjustments can also be made in another order or completely separately.

It helps picture centering if the centre point of the screen is marked on the tube e.g. with a piece of tape.

The first step of basic adjustments is the setting of options because inappropriate setting (e.g. standard) may render the adjustment impossible. This step may be omitted if there is reason to believe that the options are correct.

Do not adjust the picture out of the screen since it may be difficult to remember afterwards which adjustment caused that misadjustment.

The following adjustments must be carried out when the EEPROM has been initialized.

5.4.1 Basic Adjustments

1. Setting of options (29, 30, 31)

Check the receiver's option settings in accordance with chapter 'Option bytes'.

2. SA (19) SA

Colour oscillator synchronization.

Adjust colours "upright". →M

3. dL (3) dL

For adjustment use an external RGB source and video signal in MIX mode. Select programme position E1. Apply the R signal to SCART1 input pin 15 and video signal to SCART1 input pin 20. Connect the Fast Blanking pin 16 to R input pin 15 at the SCART socket. Adjust the RGB and video pictures to the same phase (→M) and thereafter determine picture position with BP (2) adjustment. →M

4. ud (16) and dC (4) ud dC

Adjust ud to the minimum (VOL–) for video picture (use video channel or RF VTR channel) and for RF test picture. →M
Using RF or video channel, adjust the colours of test pattern (chroma) on top of the B/W picture with dC. →M

Coarse adjustment of dL and dC without external RGB signal

Adjust ud to the minimum (VOL–) for video picture (use video channel or RF VTR channel) and for RF test picture. →M
Adjust dC to the maximum with VOL+, then decrease 10 steps. →M
Adjust dL to the same phase (VOL+). →M
Perform centering with BP (2). →M

5. SP (1) and BP (2) SP bP

Use an RGB picture. Adjust BP to the maximum (VOL+), then decrease 4 steps. (→M). Center the picture with SP (→M).

Then perform centering for RF and video pictures with BP. ➔M

If the adjustment is not possible, check dL (3) adjustment.

Coarse adjustment of BP and SP without external RGB signal

Use a video picture/RF VTR picture. Adjust BP to the maximun (VOL+), then decrease 4 steps (➔M). Perform centering with SP (➔M). Then adjust the BP for RF picture ➔M.

6. A0 (12) A0

Vertical shift.
Adjust the top border of test pattern. ➔M

7. H0 (13) H0

Picture height.
Adjust the bottom border of the test pattern the amount of half a square beyond the screen. ➔M

8. S1 (15) S1

Vertical symmetry.
Adjust the centre point of the picture. ➔M

9. S0 (14) S0

Vertical linearity.
Adjust the bottom border of test pattern with S0. See fig. 1. ➔M

10. Check H0 and S1. H0 S1

11. C1 (10) C1

Pincushion distortion correction II.

Adjust VOL – to its extreme position (the picture becomes distorted), then increase three VOL + steps. ➔M

12. Z1 (9) F1

Trapezium distortion correction II.

Widen the picture with VOL + key so that the bends (summing points) are distinct. (Fig. 2) Ignore the fact that the picture is distorted at this step. ➔M

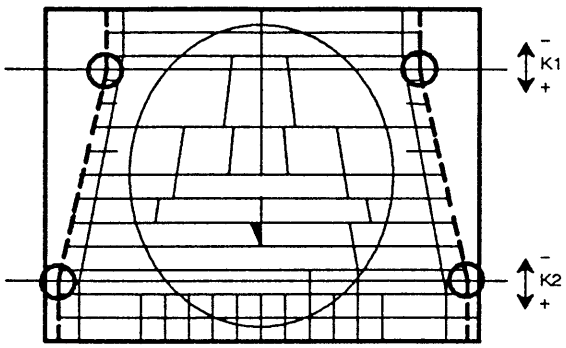


Fig. 2

13. K1 (8) H1

Adjust summing point K1 to position shown in fig. 2 (2.5 squares from top). (It may be necessary to adjust Z1 too). ➔M

14. K2 (11) H2

Adjust summing point K2 to position shown in fig. 2 (2.5 squares from bottom) (it may be necessary to adjust Z1 too). ➔M

15. Z1 (9) F1

Adjust the lines between the summing points as straight as possible (adjustment usually at minimum). ➔M

16. Z0 (6) F0

Trapezium distortion correction I.
Straighten the vertical lines at the upper half of the picture without paying attention to what happens to the lower half of the picture. ➔M

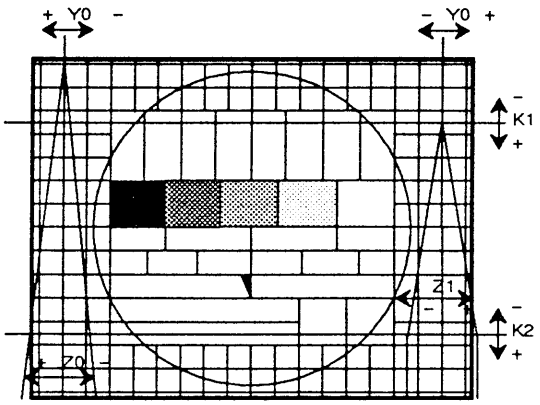


Fig. 3

17. C0 (7) C0

Pincushion distortion correction I.
Straighten the vertical lines at the lower half of the picture. Vertical lines can be straightened by alternately adjusting Z0 and C0. ➙M

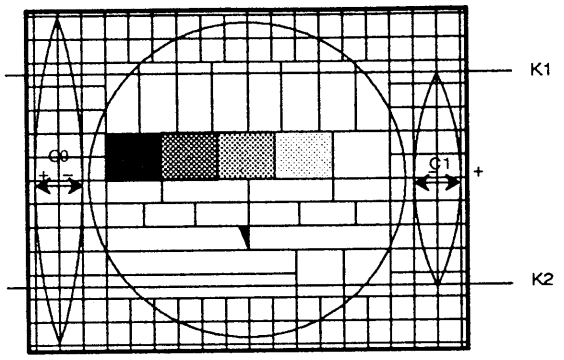


Fig. 4

18. Y0 (5) Y0

Picture width.
Adjust the top corners to correct positions. ➙M

19. C0 (7) C0

Check the position of the bottom corners. ➙M. If the picture is not straight between the summing points, check C1 and Z1 adjustments.

20. St (17) St

DTI start time adjustment. Use normal RF signal. Adjust the reflections at colour transitions of the colour bar picture to minimum. ➙M

21. Sp (18) Sp

DTI stop time adjustment. Use normal RF signal. Adjust the colour transitions of the colour bar picture to the same position as the B/W picture. ➙M

5.4.2 Grey Scale Adjustments

22. G2 (20) G2

Screen grid voltage.
Adjust brightness and contrast to minimun. Adjust G2 trimmer of the potentiometer unit on the tube base panel. Adjustment is correct when neither Mute nor P LEDs are illuminated in the display. At the same time, the most efficient gun is clamped to a reference level (cut off voltage approx. 150V), which is fixed at the lowlight adjustment and cannot be adjusted.

23. cr (21) cr, *cG (22)* cG, *cb (23)* cb

Black level adjustments.
Increase contrast to a level where picture is slightly visible. The gun which was set fixed at G2 adjustment can be found at adjustment in which Mute and P LEDs are illuminated i.e. black level of this particular colour cannot be adjusted. Adjust the grey scale of test pattern to grey by changing the black level of the two remaining guns. ➙M

24. dr (24) dr, *dG (25)* dG, *db (26)* db

Highlight adjustments.
Measure with an oscilloscope at the bases of transistors TH13, TH23 and TH33 to check which colour channel has the maximum preset gain. Leave the oscilloscope to the appropriate base and adjust contrast control for a reading of 60V from black level to white. Disconnect the oscilloscope. Adjust for normal brightness (all grey bars are discernible).

If the picture is:

- Red, decrease red with dr adjustment until white parts of test pattern turn to white.
- Green, decrease green with dG adjustment until white parts of test pattern turn to white.
- Blue, decrease blue with db adjustment until white parts of test pattern turn to white.
- Check black level adjustments. If you have to adjust these, then check the highlight adjustments too. ➙M

5.4.3 Other Adjustments

25. HA (27) HA

Horizontal adjustment of text page. Center the teletext page within the screen. ➙M

26. CA (28) CA

Teletext brightness. Adjust the contrast of test pattern to mid-position, then adjust white characters of text for equal brightness to the white in the test pattern. This procedure also adjusts the contrast of external RGB signal. ➙M

27. Focus adjustment

Set contrast close to maximum and brightness for a well balanced grey scale. Adjust focus to optimum using the Focus potentiometer of the trimming unit on the tube base panel.

5.4.4 Adjustments Required for Different Standards

Certain adjustments must be made for each standard separately on the respective programme position. Select the menu display to check the programmed standard.

SP

Separate adjustments for PAL and NTSC 3.58 MHz standards (SECAM uses the same values as PAL).

BP

To be adjusted for PAL, NTSC 3.58 and SECAM standards separately, each for TV, RGB and VIDEO modes.

dL, dC

To be adjusted for PAL, NTSC 3.58 and SECAM standards separately.

Y0, Z0, C0, K1, K2, Z1, C1, A0, H0, S0, S1.

To be adjusted for PAL, NTSC 3.58 and NTSC 4.43 standards separately (SECAM uses the same values as PAL).

ud

To be adjusted for PAL, NTSC 3.58 and SECAM standards separately and each for TV and VIDEO modes. RGB uses the same values as TV mode.

St and Sp

Separate adjustments for PAL, NTSC 3.58 and SECAM standards.

SA

Separate adjustments for PAL and NTSC 3.58 standards (SECAM uses the same values as PAL).

G2, cr, cG, cb, dr, dG, db, HA and CA

Adjustments and option bytes are common for all standards and modes.

5.5 REPAIRING INSTRUCTIONS

5.5.1 Switching On the TV with Initial Values

If you suspect that some adjustment value prevents the set from switching on the suspected memory IC should be replaced with an empty one (X2404). While holding down the normalisation key on the handset switch on the TV with the mains switch, thereafter press the memory key →M on the handset within one second. If the programming was succesful channel 24 and PAL standard should be found on each programme number and a reasonable picture should be obtained if the TV is otherwise O.K.

5.5.2 Adjustments Necessary After IC or Module Replacement

Memory IC EEPROM X2404

Switch on the TV with the initial values and make all adjustments.

Central Control Unit CCU-SALO-XX

Check that this is same version number as the one which has been removed. If not, the TV must be switched on with initial values as described above and thereafter all adjustments must be made.

Points to be noted when CCU - SALO - 04 is replaced with 07.

- Check the options
- Check gray scale adjustments
- The processor operates only with TPU 2734

Clock Generator MCU2632

Check colour oscillator adjustment (SA)

Video Processor Unit VPU2203

Check colour oscillator adjustment (SA), delay between luminance and chrominance (ud) and DTI start/stop time (St and Sp).

Secam Processor Unit SPU2220

Check delay between luminance and chrominance (ud) and DTI start/stop time (St and Sp).

Transient Improvement Processor DTI2223

Check delay between luminance and chrominance (ud) and DTI start/stop time (St and Sp). Check dL and dC adustments.

Teletext Processor TPU2734

Check teletext horizontal adjustment (HA) and teletext contrast adjustment (CA).

Video Coder/Decoder Unit VCU2133

Check G2, black level adjustments (cr, cG and cb), highlights (dr, dG and db) and teletext contrast adjustment (CA).

Deflection Processor DPU2543

Check all picture geometry adjustments.

Tube Base Board

Check G2, Focus, black level and highlight adjustments.

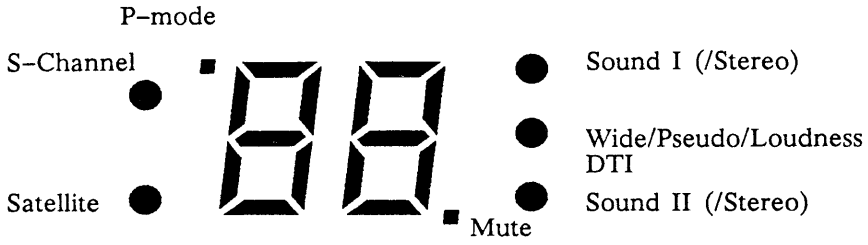
Vertical output stage

Check picture height, position of top edge and thereafter the East-West adjustments.

Tuner/IF Amplifier

Check operation of
- Automatic channel search
- FM radio
- SCART1
- Different receiving bands (I/III/UHF)
- Tuner AGC (tuner pin 2) 7V for 1.5 - 2 mV aerial signal

5.5.3 Digit Display and LED's



For Service Manuals
MAURITRON SERVICES
8 Cherry Tree Road, Chinnor
Oxfordshire, OX9 4QY.
Tel (01844) 351694
Fax (01844) 352554
email:- sales@mauritron.co.uk

5.6 OPTION BYTES 1, 2 and 3

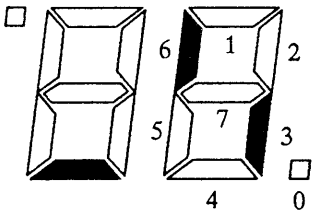
The TV's configuration is determined with option bytes.

An option byte consists of 8 bits. The state of each bit is indicated by the corresponding segment in the right-hand digit display (segment 0 = the dot after the digit).

The state of each bit can be toggled with number keys 0 to 7. If the segment lights up, corresponding bit is set to "1".

The effect of options is not visible until returning to the TV mode!

5.6.1 Option byte 1 (29)



Bit 1	Bit 0	
0	0	Salora
0	1	G
1	0	L
1	1	OEM

Bit 2

Not in use

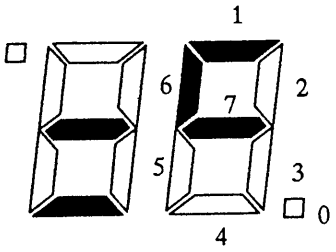
Bit 3

0 = No AES function
1 = AES control system

Bit 5	Bit 4	
0	0	Normal tuner
0	1	4-Band tuner with "Hyper" Channels (*21 ...*41)
1	0	UHF only
1	1	3-Band tuner with extended VHF1 to E5

Bit 7	Bit 6	IF/MHz
0	0	38.9
0	1	39.5
1	0	38.0
1	1	37.0

5.6.2 Option byte 2 (30)



Bit 0
- 0 = Mute ON during Search and when no sync
- 1 = Sound ON during Search and when no sync

Bit 1 Language selection options
- 0 = 4-position language selection
- 1 = 2-position language selection (Normal setting)

Bit 2
- 0 = PAL/SECAM identification only in P mode (=at channel change)
- 1 = PAL/SECAM identification always

Bit 3
- 0 = No AFC tracking (VTR operation)
- 1 = Enable AFC tracking on program no's 7 and 8

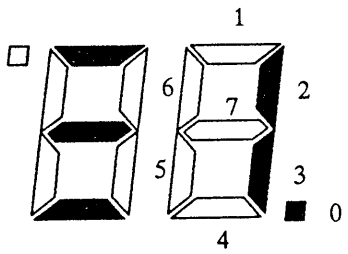
Bit 4
- 0 = No protected programs
- 1 = Tuning information of programs 1 to 6 is protected (memorizing needs password P, 0, # and →M)

Bit 5
- 0 = Bleep in tetelext mode
- 1 = "manufacturing mode"

Bit 6 . Text before OSD Bargraph
- 0 = Only bargraph
- 1 = Bargraph with text

Bit 7 On Screen Displays (with Analog adjustments and "Menukey")
- 0 = No OSD
- 1 = CRT display ON

5.6.3 Option byte 3 (31)



Bit 0
- 0 = DTI not in system
- 1 = DTI in system

Bit 1
- 0 = No NTSC 3.58 MHz
- 1 = NTSC 3.58 MHz

Bit 2
- 0 = No FM radio
- 1 = FM radio in system

Bit 3
- 0 = DTI 2222
- 1 = DTI2223 and SPU 2220 mask 21 or later

Bit 4
- 0 = RGB identification
- 1 = no external RGB identification

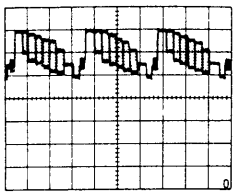
Bit 5
- 0 = No special programme number input in PIP mode.
- 1 = PIP channel change with programme number and programme number up/down keys

Bit 6
- 0 = Ghost Row parity checking by hardware (this is correct setting)
- 1 = Ghost Row parity checking by software

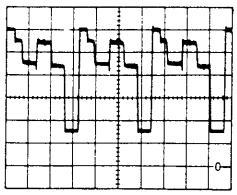
Bit 7
- 0 = Optimum FLOF operation (correct setting)
- 1 = Immediate following page request

PULSE PICTURES

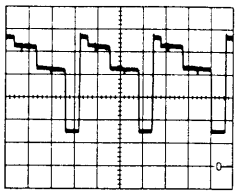
B01 H 2 Vpp



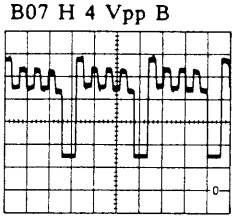
B05 H 4 Vpp R



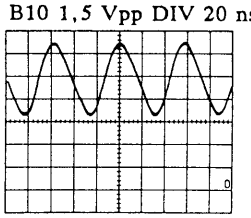
B06 H 4 Vpp G



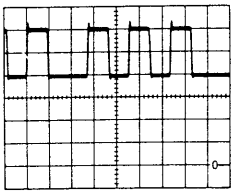
B07 H 4 Vpp B



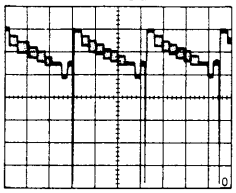
B10 1,5 Vpp DIV 20 ns



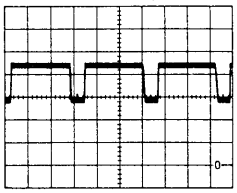
B11 DIV 250 ns



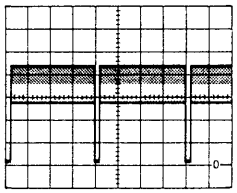
B15 H 7 Vpp



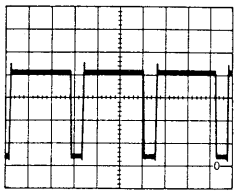
B16 H 1,5 Vpp



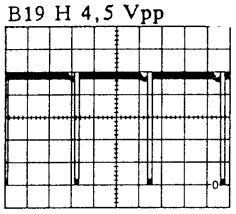
B17 V 4 Vpp



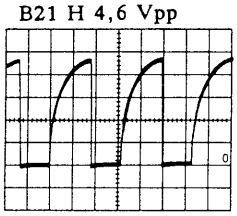
B18 H 3,5 Vpp



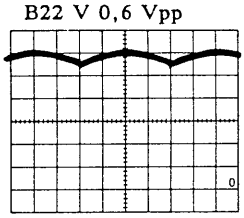
B19 H 4,5 Vpp



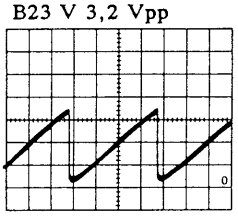
B21 H 4,6 Vpp



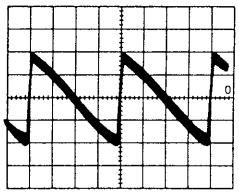
B22 V 0,6 Vpp



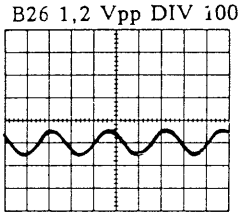
B23 V 3,2 Vpp



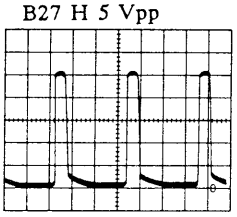
B25 V 2 Vpp



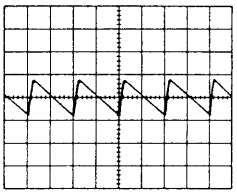
B26 1,2 Vpp DIV 100 ns



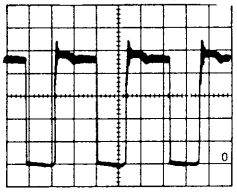
B27 H 5 Vpp



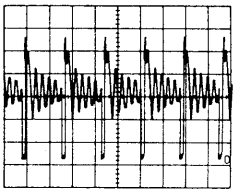
B30 100 Hz 8Vpp



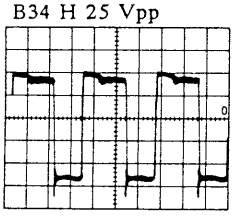
B31 H 550 Vpp



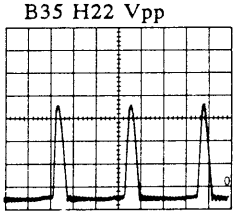
B32 H 550 Vpp (St-By)



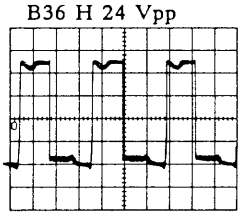
B34 H 25 Vpp



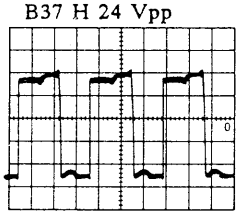
B35 H22 Vpp



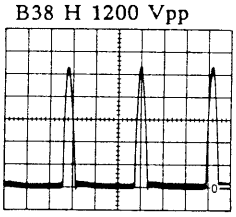
B36 H 24 Vpp



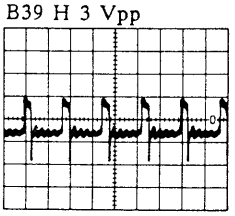
B37 H 24 Vpp



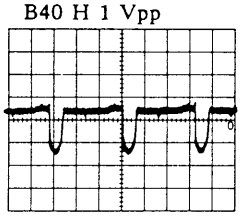
B38 H 1200 Vpp



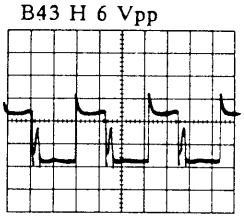
B39 H 3 Vpp



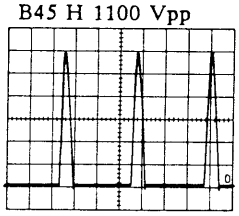
B40 H 1 Vpp



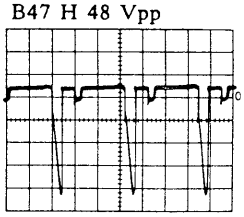
B43 H 6 Vpp



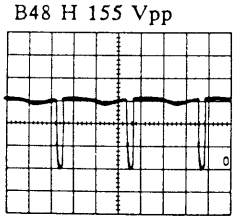
B45 H 1100 Vpp



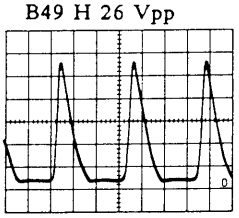
B47 H 48 Vpp



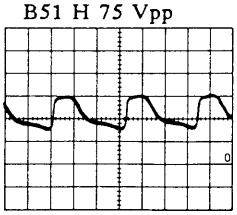
B48 H 155 Vpp



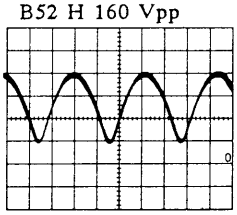
B49 H 26 Vpp



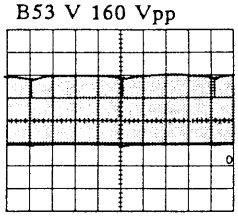
B51 H 75 Vpp



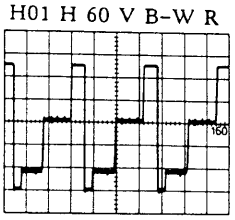
B52 H 160 Vpp



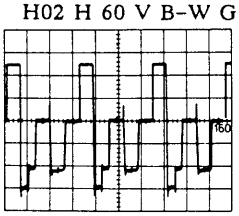
B53 V 160 Vpp



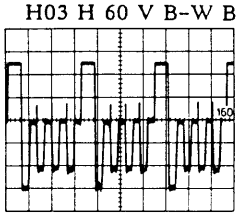
H01 H 60 V B-W R



H02 H 60 V B-W G



H03 H 60 V B-W B



SPARE PARTS LIST 21M87

Description	Code	PG
Resistor		
. 15R . . J . 0W25	AA0629	01
. 39R . . J . 0W25	AA0639	01
. 56R . . J . 0W25	AA0643	01
. 68R . . J . 0W25	AA0645	01
. 82R . . J . 0W25	AA0647	01
. 100R . J . 0W25	AA0649	01
. 120R . J . 0W25	AA0651	01
. 150R . J . 0W25	AA0653	01
. 180R . J . 0W25	AA0655	01
. 220R . J . 0W25	AA0657	01
. 270R . J . 0W25	AA0659	01
. 330R . J . 0W25	AA0661	01
. 470R . J . 0W25	AA0665	01
. 560R . J . 0W25	AA0667	01
. 820R . J . 0W25	AA0671	01
. 1k0 . . J . 0W25	AA0673	01
. 1k2 . . J . 0W25	AA0675	01
. 1k5 . . J . 0W25	AA0677	01
. 1k8 . . J . 0W25	AA0679	01
. 2k2 . . J . 0W25	AA0681	01
. 2k7 . . J . 0W25	AA0683	01
. 3k3 . . J . 0W25	AA0685	01
. 3k9 . . J . 0W25	AA0687	01
. 4k7 . . J . 0W25	AA0689	01
. 5k6 . . J . 0W25	AA0691	01
. 6k8 . . J . 0W25	AA0693	01
. 8k2 . . J . 0W25	AA0695	01
. 10k . . J . 0W25	AA0697	01
. 12k . . J . 0W25	AA0699	01
. 15k . . J . 0W25	AA0701	01
. 18k . . J . 0W25	AA0703	01
. 22k . . J . 0W25	AA0705	01
. 27k . . J . 0W25	AA0707	01
. 33k . . J . 0W25	AA0709	01
. 47k . . J . 0W25	AA0713	01
. 68k . . J . 0W25	AA0717	01
. 82k . . J . 0W25	AA0719	01
. 100k . J . 0W25	AA0721	01
. 150k . J . 0W25	AA0725	01
. 180k . J . 0W25	AA0727	01
. 220k . J . 0W25	AA0729	01
. 270k . J . 0W25	AA0731	01
. 330k . J . 0W25	AA0733	01
. 470k . J . 0W25	AA0737	01
. 1M0 . . J . 0W25	AA0745	01
. 4M7 . . J . 0W25	AA0761	01
. 0R22 . J . 0W25	AB0585	01
. 0R56 . J . 0W25	AB0595	01
. 1R0 . . J . 0W25	AB0601	01
. 1R8 . . J . 0W25	AB0607	01
. 4R7 . . J . 0W25	AB0617	01
. 10R . . J . 0W25	AB0625	01
. 12R . . J . 0W25	AB0627	01
. 22R . . J . 0W25	AB0633	01
. 33R . . J . 0W25	AB0637	01
. 56R . . J . 0W25	AB0643	01
. 100R . J . 0W25	AB0649	01
. 1k0 . . J . 0W25	AB0673	01
CHIP		
. 680R . J . 0W12	AC8669	01
. 1k0 . . J . 0W12	AC8673	01
. 3K3 . . J . 0W12	AC8685	01
. 4k7 . . J . 0W12	AC8689	01
. 5k6 . . J . 0W12	AC8691	01
. 10k . . J . 0W12	AC8697	01
. 12k . . J . 0W12	AC8699	01
. 22k . . J . 0W12	AC8705	01
. 33k . . J . 0W12	AC8709	01
. 68k . . J . 0W12	AC8717	01
. 100k . J . 0W12	AC8721	01
. 220k . J . 0W12	AC8729	01
. 1k0 . . K . 0W5	AD0373	01
. 1k5 . . K . 0W5	AD0377	01
. 8M2 . . K . 0W5	AD1967	01
. 1M0 . . K . 0W25	AD2745	01
. 1R00 . F . 0W5	AG3101	01
. 1R54 . F . 0W5	AG3119	01
. 12R1 . F . 0W5	AG3209	01
. 15R4 . F . 0W5	AG3219	01
. 33R2 . F . 0W5	AG3251	01
. 14k0 . F . 0W5	AG3515	01
. 20k0 . F . 0W5	AG3530	01
. 46k4 . F . 0W5	AG3565	01
. 82k5 . F . 0W5	AG3589	01
. 100k . F . 0W5	AG3601	01

Description	Code	PG
. 215k . F . 0W5	AG3633	01
. 274k . F . 0W5	AG3643	01
. 2R2 . . K . 5W-C-3	AJ0088	04
. 39R . . J . 2W0	AJ2663	02
. 56R . . J . 2W0	AJ2703	02
. 22k . . J . 2W0	AJ3323	02
. 100k . J . 2W0	AJ3483	02
. 47k H10	AQ1355	02
. 100k H10	AQ2360	03
DUAL-PTC PTH 451 C02	AW0034	08
Capacitor		
. 3N3 . S . 1kV	CA0313	01
. 3P3 . . C . 50V	CB0192	01
. 10P . . J . 50V	CB0292	01
. 15P . . J . 50V	CB0352	01
. 18P . . J . 50V	CB0382	01
. 100P . G 63V	CB0671	01
. 100P . J . 50V	CB0673	01
. 220P . J . 50V	CB0792	01
CHIP		
. 10P . . J . 50V	CB4125	01
. 56P . . J . 50V	CB4143	02
. 68P . . J . 50V	CB4145	02
. 100P . J . 50V	CB4151	02
. 220P . J . 50V	CB4159	02
. 330P . J . 50V	CB4163	02
. 470P . J . 50V	CB4167	02
. 47P . . J . 50V	CB4738	02
. 680P . K . 50V	CB4958	02
. 820P . K . 50V	CB4968	02
. 150P . K . 500V	CC0110	01
. 270P . K . 500V	CC0140	01
. 330P . K . 500V	CC0150	01
. 330P . K . 50V	CC0154	01
. 470P . K . 500V	CC0170	01
. 470P . K . 50V	CC0174	01
. 1N0 . . K . 50V	CC0204	01
. 1N5 . . K . 50V	CC0224	01
. 2N2 . . K . 50V	CC0244	01
. 4N7 . . Z . 50V	CC0750	01
. 10N . . Z . 50V	CC0772	01
. 22N . . Z . 50V	CC0795	01
. 100N . Z . 25V	CC0853	02
. 1N5 . . K . 50V	CC4220	02
. 3N3 . . K . 50V	CC4260	02
. 10N . . Z . 50V	CC4770	02
. 22N . . Z . 25V	CC4795	02
. 100N . Z . 25V	CC4855	03
. 2N2 . . M 400VAC	CE0116	05
. 100N . M 250VAC	CE0210	04
. 270P . K . 1k5V	CE2034	04
. 680P . K . 1k5V	CE2074	04
. 1N5 . . K . 1k5V	CE2154	04
. 5N6 . . J . 1k5V	CE2304	04
. 420N . J . 250V	CE3092	06
. 22N . . K . 630V	CK0165	02
. 100N . K . 100V	CK0282	02
. 100N . K . 250V	CK0284	02
. 1U5 . . K . 100V	CK0477	04
. 2U2 . . K . 250V	CK0494	06
. 6U8 . . K . 100V	CK0542	09
. 22N . . K . 250V	CK1468	02
. 33N . . K . 250V	CK1508	02
. 1N2 . . K . 63V	CK2164	02
. 10N . . K . 63V	CK2384	02
. 22N . . K . 63V	CK2464	02
. 33N . . K . 63V	CK2504	02
. 68N . . K . 50V	CK2584	02
. 100N . K . 63V	CK2626	03
. 220N . K . 63V	CK2704	03
. 470N . K . 63V	CK2784	02
. 220U . M 385V	CN0087	16
. 1U0 . . M 50V	CN0150	02
. 1U0 . . M 50V	CN0154	02
. 2U2 . . . . 63V	CN0201	03
. 2U2 . . M 50V	CN0204	02
. 2U2 . . T . 350V	CN0207	03
. 4U7 . . M 35V	CN0258	02
. 10U . . M 35V	CN0308	02
. 22U . . M 16V	CN0370	03
. 22U . . Z . 35V	CN0372	03
. 47U . . Z . 35V	CN0423	03
. 220U . S . 16V	CN0519	03
. 470U . T . 16V	CN0604	03
. 470U . M 16V	CN0617	03

Description	Code	PG
. 2200U T . 25V	CN0817	06
. 100U 25V	CN2521	03
. 220U . M . 40V	CN2589	04
. 100U 16V	CN2711	04
. 1P6/15P	CW0153	04
Choke		
. 8.4uH	FJ0149	06
. 90uH	FJ0284	05
. SPT 0406-330K6	FJ0429	04
. 15uH	FJ0448	04
High-response choke 4u7H	FJ0478	03
Choke		
. 4uH	FJ0484	03
. SPT 0406 150K-6	FJ0505	03
Air coil	FJ0534	01
Choke 5UH	FJ1340	03
Interference choke 2x33mH	FJ1470	12
Diode-split	FM0513	30
Coil KXNAS-K5881 GI	FU0466	05
Combicoil	FU1026	15
Diode		
. BY 133	JB0030	03
. BY 228	JB0034	05
. BY 448	JB0041	08
. 1N 4148	JF0025	01
. 1N 002	JF0060	02
. BA 159	JF0062	03
. BAV 21	JF0072	03
. RGP10G	JF0073	03
. RGP 15J	JF0074	03
. PE 2D	JF0106	03
. OF 799	JF0114	03
. BYV 95C	JF0124	03
. BAV 70	JF4002	02
. BZX 83C5V6	JH0053	02
. BZX 83C12	JH0054	03
. BZX 83C6V2	JH0057	03
. BZX 83C30	JH0079	02
. BZX 83C5V1	JH0087	02
. BZX 85C4V7	JH0102	
. BZX 84C5V1	JH4109	03
. BB 204 B	JK0057	05
LED		
. TLUR 4401 M	JL0005	03
. G 314 N-3	JL0006	04
. BPW 50	JL0020	12
. CQY 89A-2	JL0021	06
7-seg LTD-4606R-NB	JL0050	12
Transistor		
. BC 547 B	JM0099	03
. BC 557 B	JM0100	03
. BF 423	JM0205	06
. BF 871	JM0219	05
. BF 422	JM0244	04
. 2 SD 1577	JM0264	13
. BC 368	JM0281	04
. BC 369	JM0282	06
. R 4060	JM0283	12
. BCW 60 B	JM4106	04
FET BS 208	JS0017	07
Silicondielectric	JZ0010	08
Focus	LF0057	10
VTR control 3	LF0069	13
Ipsalo circuit 4	LF0070	22
IC		
. TBA 120 U	LM0045	09
. SAA 1250	LM0230	20
. LM 339 N	LM0255	10
. MC 7812 CT R	LM0256	10
. CD 4053 B 16P	LM0323	09
. TDA 2040	LM0340	14
. TBA 2800	LM0399	09
. MEA 2901	LM0401	12
. CD 4052 B	LM0530	07
. TMM 4164 AP-20	LM0550	15
IC		
. TPU 2732	LM0551	31
. LM 2940 CT-5.0 5V	LM0603	11
. TDA 8172	LM0604	13
. DPU 2543	LM0606	22
. MCU 2632	LM0607	11
. VCU 2133	LM0608	22

Description	Code	PG
. VPU 2203	LM0609	18
. ADC 2310 E	LM0610	13
. APU 2470 S	LM0612	23
. TDA 2822 M	LM0623	09
. X 2404	LM0631	24
. CCU SALO-01	LM0632	23
. DTI 2222	LM0633	18
. CD 4052 PT	LM4102	06
. 1458	LM4401	06
. TDA 7040 T	LM5002	11
. TDA 7021 T	LM5003	14
. IC-socket		
. C 830802	LZ0003	03
. C 832402	LZ0036	05
. C 834002	LZ0050	08
Crystal		
. 14,318180 MHz HC-18/U	QA0080	08
. 17,734475 MHz HC-49/U	QA0089	08
Ceramic filter SFE 6,0 MBF	QA0118	04
Crystal 4.000MHz	QA0139	09
Mains switch MSA-PF	QA0265	11
Keybad	QG0276	09
Connector RTM 1,3/5/8.002	QK0851	01
Connector		
. 3642-10-10	QK0941	04
. 3645-13-13	QK0954	05
Connector for picture tube socket	QK1014	12
Connector		
. MKF 1516-1-0-1616 STEQ19	QK1073	06
. MGZ 1059-1-3-905	QK1093	03
. MKS 1854-1-0-404 Q14	QK1134	02
. MKS 1954-1-0-404 Q16	QK1224	02
. MKS 1955-1-0-505 Q18	QK1225	02
. MKS 1956-1-0-606 Q9	QK1226	03
. MKS 1957-1-0-707 Q17	QK1227	02
. MKS 1963-1-0-1313 Q5	QK1233	03
. MKS 1966-1-0-1616 Q19	QK1236	03
. MKS 1970-1-0-2020 Q8	QK1240	04
. MKS 1760-1-0-1010 Q6	QK1250	03
. MKS 2770-1-0-2020 SCS8	QK1280	05
. MKS 2822-1-1-202 SCS30	QK1282	02
Extra loudspeaker connector		
. TCS 9003-01-1011 Q20	QK1327	05
SCART-connector 1234-21-21 Q1	QK1349	07
Antenna connector	QK1407	07
Feed through socket	QK1415	01
Connector		
. 3,5MM ST HSJ-1061-01-440 Q4	QK1427	05
. MKS 2954-1-0-404 SCS14	QK1454	03
. MKS 2956-1-0-606 SCS25	QK1456	03
Fuse holder RFS 5620	QT0102	01
Fuse T2,0A/250V	QT0717	02
Wire bundle SCS-STS	SE1108	15
Wire bundle Deflection coil	SE1524	08
Mains cable	SE1525	15
Wire bundle		
. STH-STB	SE1560	08
. STH-STB	SE1765	08
. STB-loudspeakers	SE1784	10
. Mains cable SCS-STB	SE1785	08
. Tweeter/Woofer	SE1791	08
. SCS-STEQ	SE1808	11
Mark SALORA	UA1886	09
Mark DIGITAL	UA1887	09
Lens	UA5018	03
Bottom	UA5019	08
Cover	UA502A	12
Battery cover	UA503A	06
Heat sink	UC2491	09
Interference protector	UC2608	06
Interference protector	UC2614	08
Fastening spring	UC3019	02
Battery spring	UC3127	03
Fastening for degaussing coil	UG0267	02
Support plugg	UG0290	02
Touch protection	UG0575	02
LED raiser	UG0576	02
Lead band	UJ0134	01
Protection for capacitor	UJ0156	02
Push button	UT0992	03

Description	Code	PG
Resistor		
. 15R . . J . 0W25	AA0629	01
. 39R . . J . 0W25	AA0639	01
. 56R . . J . 0W25	AA0643	01
. 68R . . J . 0W25	AA0645	01
. 82R . . J . 0W25	AA0647	01
. 100R . J . 0W25	AA0649	01
. 120R . J . 0W25	AA0651	01
. 150R . J . 0W25	AA0653	01
. 180R . J . 0W25	AA0655	01
. 220R . J . 0W25	AA0657	01
. 270R . J . 0W25	AA0659	01
. 470R . J . 0W25	AA0665	01
. 560R . J . 0W25	AA0667	01
. 820R . J . 0W25	AA0671	01
. 1k0 . . J . 0W25	AA0673	01
. 1k2 . . J . 0W25	AA0675	01
. 1k5 . . J . 0W25	AA0677	01
. 1k8 . . J . 0W25	AA0679	01
. 2k2 . . J . 0W25	AA0681	01
. 2k7 . . J . 0W25	AA0683	01
. 3k3 . . J . 0W25	AA0685	01
. 3k9 . . J . 0W25	AA0687	01
. 4k7 . . J . 0W25	AA0689	01
. 5k6 . . J . 0W25	AA0691	01
. 6k8 . . J . 0W25	AA0693	01
. 8k2 . . J . 0W25	AA0695	01
. 10k . . J . 0W25	AA0697	01
. 12k . . J . 0W25	AA0699	01
. 15k . . J . 0W25	AA0701	01
. 18k . . J . 0W25	AA0703	01
. 22k . . J . 0W25	AA0705	01
. 27k . . J . 0W25	AA0707	01
. 33k . . J . 0W25	AA0709	01
. 47k . . J . 0W25	AA0713	01
. 68k . . J . 0W25	AA0717	01
. 82k . . J . 0W25	AA0719	01
. 100k . J . 0W25	AA0721	01
. 150k . J . 0W25	AA0725	01
. 180k . J . 0W25	AA0727	01
. 220k . J . 0W25	AA0729	01
. 270k . J . 0W25	AA0731	01
. 330k . J . 0W25	AA0733	01
. 470k . J . 0W25	AA0737	01
. 1M0 . . J . 0W25	AA0745	01
. 4M7 . . J . 0W25	AA0761	01
. 0R22 . J . 0W25	AB0585	01
. 0R56 . J . 0W25	AB0595	01
. 1R0 . . J . 0W25	AB0601	01
. 1R8 . . J . 0W25	AB0607	01
. 4R7 . . J . 0W25	AB0617	01
. 10R . . J . 0W25	AB0625	01
. 12R . . J . 0W25	AB0627	01
. 22R . . J . 0W25	AB0633	01
. 33R . . J . 0W25	AB0637	01
. 56R . . J . 0W25	AB0643	01
. 100R . J . 0W25	AB0649	01
. 1k0 . . J . 0W25	AB0673	01
CHIP		
. 680R . J . 0W12	AC8669	01
. 1k0 . . J . 0W12	AC8673	01
. 3K3 . . J . 0W12	AC8685	01
. 4k7 . . J . 0W12	AC8689	01
. 5k6 . . J . 0W12	AC8691	01
. 10k . . J . 0W12	AC8697	01
. 12k . . J . 0W12	AC8699	01
. 22k . . J . 0W12	AC8705	01
. 33k . . J . 0W12	AC8709	01
. 68k . . J . 0W12	AC8717	01
. 100k . J . 0W12	AC8721	01
. 220k . J . 0W12	AC8729	01
. 1k0 . . K . 0W5	AD0373	01
. 1k5 . . K . 0W5	AD0377	01
. 8M2 . . K . 0W5	AD1967	01
. 1M0 . . K . 0W25	AD2745	01
. 1R00 . F . 0W5	AG3101	01
. 12R1 . F . 0W5	AG3209	01
. 15R4 . F . 0W5	AG3219	01
. 33R2 . F . 0W5	AG3251	01
. 14k0 . F . 0W5	AG3515	01
. 20k0 . F . 0W5	AG3530	01
. 46k4 . F . 0W5	AG3565	01
. 82k5 . F . 0W5	AG3589	01
. 100k . F . 0W5	AG3601	01
. 274k . F . 0W5	AG3643	01
. 2R2 . . K . 5W-C-3	AJ0088	04

Description	Code	PG
. 39R . . J . 2W0	AJ2663	02
. 56R . . J . 2W0	AJ2703	02
. 22k . . J . 2W0	AJ3323	02
. 100k . J . 2W0	AJ3483	02
. 47k H10	AQ1355	02
. 100k H10	AQ2360	03
DUAL-PTC PTH 451 C02	AW0034	08
Capacitor		
. 3N3 . S . 1kV	CA0313	01
. 3P3 . . C . 50V	CB0192	01
. 10P . . J . 50V	CB0292	01
. 15P . . J . 50V	CB0352	01
. 18P . . J . 50V	CB0382	01
. 100P . G 63V	CB0671	01
. 100P . J . 50V	CB0673	01
. 220P . J . 50V	CB0792	01
. 10P . . J . 50V	CB4125	01
. 56P . . J . 50V	CB4143	02
. 68P . . J . 50V	CB4145	02
. 100P . J . 50V	CB4151	02
. 220P . J . 50V	CB4159	02
. 330P . J . 50V	CB4163	02
. 470P . J . 50V	CB4167	02
. 47P . . J . 50V	CB4738	02
. 680P . K . 50V	CB4958	02
. 820P . K . 50V	CB4968	02
. 150P . K . 500V	CC0110	01
. 270P . K . 500V	CC0140	01
. 330P . K . 500V	CC0150	01
. 330P . K . 50V	CC0154	01
. 470P . K . 500V	CC0170	01
. 470P . K . 50V	CC0174	01
. 1N0 . K . 50V	CC0204	01
. 1N5 . K . 50V	CC0224	01
. 2N2 . K . 50V	CC0244	01
. 4N7 . Z . 50V	CC0750	01
. 10N . Z . 50V	CC0772	01
. 22N . Z . 50V	CC0795	01
. 100N Z . 25V	CC0853	02
. 1N5 . K . 50V	CC4220	02
. 3N3 . K . 50V	CC4260	02
. 10N . Z . 50V	CC4770	02
. 22N . Z . 25V	CC4795	02
. 100N Z . 25V	CC4855	03
. 2N2 . M 400VAC	CE0116	05
. 100N M 250VAC	CE0210	04
. 270P . K . 1k5V	CE2034	04
. 680P . K . 1k5V	CE2074	04
. 5N6 . J . 1k5V	CE2304	04
. 8N2 . J . 1k5V	CE2344	06
. 250N J . 250V	CE3035	05
. 1U2 . J . 250V	CE3223	07
. 22N . K . 630V	CK0165	02
. 100N K . 100V	CK0282	02
. 100N K . 250V	CK0284	02
. 2U2 . K . 250V	CK0494	06
. 6U8 . K . 100V	CK0542	09
. 22N . K . 250V	CK1468	02
. 33N . K . 250V	CK1508	02
. 1N2 . K . 63V	CK2164	02
. 10N . K . 63V	CK2384	02
. 22N . K . 63V	CK2464	02
. 33N . K . 63V	CK2504	02
. 47N . K . 63V	CK2544	02
. 68N . K . 50V	CK2584	02
. 100N K . 63V	CK2626	03
. 220N K . 63V	CK2704	03
. 470N K . 63V	CK2784	02
. 220U M 385V	CN0087	16
. 1U0 . M 50V	CN0150	02
. 1U0 . M 50V	CN0154	02
. 2U2 . . . . 63V	CN0201	03
. 2U2 . M 50V	CN0204	02
. 2U2 . T . 350V	CN0207	03
. 4U7 . M 35V	CN0258	02
. 10U . M 35V	CN0308	02
. 22U . M 16V	CN0370	03
. 22U . Z . 35V	CN0372	03
. 47U . Z . 35V	CN0423	03
. 220U S . 16V	CN0519	03
. 470U T . 16V	CN0604	03
. 470U M 16V	CN0617	03
. 2200U T . 25V	CN0817	06
. 100U 25V	CN2521	03
. 220U M 40V	CN2589	04

Description	Code	PG
. 100U 16V	CN2711	04
. 1P6/15P	CW0153	04
Choke		
. 90uH	FJ0284	05
. SPT 0406-330K6	FJ0429	04
. 15uH	FJ0448	04
High-response choke 4u7H	FJ0478	03
Choke		
. 4uH	FJ0484	03
. SPT 0406 150K-6	FJ0505	03
Air coil	FJ0534	01
Choke/Drossel 5UH	FJ1340	03
Interference choke 2x33mH	FJ1470	12
Diode-split	FM0513	30
Coil		
. KXNAS-K5881 GI	FU0466	05
. Combicoil	FU1026	15
Diode		
. BY 133	JB0030	03
. BY 228	JB0034	05
. BY 448	JB0041	08
. 1N 4148	JF0025	01
. 1N 002	JF0060	02
. BA 159	JF0062	03
. BAV 21	JF0072	03
. RGP10G	JF0073	03
. RGP 15J	JF0074	03
. PE 2D	JF0106	03
. OF 799	JF0114	03
. BYV 95C	JF0124	03
. BAV 70	JF4002	02
. BZX 83C5V6	JH0053	02
. BZX 83C12	JH0054	03
. BZX 83C6V2	JH0057	03
. BZX 83C30	JH0079	02
. BZX 83C5V1	JH0087	02
. BZX 85C4V7	JH0102	02
. BZX 84C5V1	JH4109	03
. BB 204 B	JK0057	05
. TLUR 4401 M	JL0005	03
. G 314 N-3	JL0006	04
. BPW 50	JL0020	12
. CQY 89A-2	JL0021	06
7-seg LTD-4606R-NB	JL0050	12
Transistor		
. BC 547 B	JM0099	03
. BC 557 B	JM0100	03
. BF 423	JM0205	06
. BF 871	JM0219	05
. BF 422	JM0244	04
. 2 SD 1577	JM0264	13
. BC 368	JM0281	04
. BC 369	JM0282	06
. R 4060	JM0283	12
. BCW 60 B	JM4106	04
FET BS 208	JS0017	07
Silicondielectric	JZ0010	08
Focus	LF0057	10
VTR control 3	LF0069	13
Ipsalo circuit 4	LF0070	22
IC		
. TBA 120 U	LM0045	09
. SAA 1250	LM0230	20
. LM 339 N	LM0255	10
. MC 7812 CT R	LM0256	10
. CD 4053 B 16P	LM0323	09
. TDA 2040	LM0340	14
. TBA 2800	LM0399	09
. MEA 2901	LM0401	12
. CD 4052 B	LM0530	07
. TMM 4164 AP-20	LM0550	15
. TPU 2732	LM0551	31
. LM 2940 CT-5.0 5V	LM0603	11
. TDA 8172	LM0604	13
. DPU 2543	LM0606	22
. MCU 2632	LM0607	11
. VCU 2133	LM0608	22
. VPU 2203	LM0609	18
. ADC 2310 E	LM0610	13
. APU 2470 S	LM0612	23

Description	Code	PG
. TDA 2822 M	LM0623	09
. X 2404	LM0631	24
. CCU SALO-01	LM0632	23
. DTI 2222	LM0633	18
. CD 4052 PT	LM4102	06
. 1458	LM4401	06
. TDA 7040 T	LM5002	11
. TDA 7021 T	LM5003	14
IC-socket		
. C 830802	LZ0003	03
. C 832402	LZ0036	05
. C 834002	LZ0050	08
Crystal		
. 14,318180 MHz HC-18/U	QA0080	08
. 17,734475 MHz HC-49/U	QA0089	08
Ceramic filter SFE 6,0 MBF	QA0118	04
Crystal 4.000MHz	QA0139	09
Keybad	QG0265	11
Keypad	QK0276	09
Connector tap RTM 1,3/5/8.002	QK0851	01
Connector		
. 3642-10-10	QK0941	04
. 3645-13-13	QK0954	05
Connector for picture tube socket	QK1014	12
Connector		
. MKF 1516-1-0-1616 STEQ19	QK1073	06
. MGZ 1059-1-3-905	QK1093	03
. MKS 1854-1-0-404 Q14	QK1134	02
. MKS 1954-1-0-404 Q16	QK1224	02
. MKS 1955-1-0-505 Q18	QK1225	02
. MKS 1956-1-0-606 Q9	QK1226	03
. MKS 1957-1-0-707 Q17	QK1227	02
. MKS 1963-1-0-1313 Q5	QK1233	03
. MKS 1966-1-0-1616 Q19	QK1236	03
. MKS 1970-1-0-2020 Q8	QK1240	04
. MKS 1760-1-0-1010 Q6	QK1250	03
. MKS 2770-1-0-2020 SCS8	QK1280	05
. MKS 2822-1-1-202 SCS30	QK1282	02
Extra loudspeaker connector		
. TCS 9003-01-1011 Q20	QK1327	05
SCART-connector 1234-21-21 Q1	QK1349	07
Antenna connector	QK1407	07
Feed through socket	QK1415	01
Connector		
. 3,5MM ST HSJ-1061-01-440 Q4	QK1427	05
. MKS 2954-1-0-404	QK1454	03
. MKS 2956-1-0-606	QK1456	03
Loudspeaker	QP0111	18
Loudspeaker	QP0211	15
Fuse holder RFS 5620	QT0102	01
Fuse T2,0A/250V	QT0717	02
Battery 9V	SA0016	10
Wire bundle SCS-STS	SE1108	15
Wire bundle, deflection coil	SE1524	08
Mains cable	SE1525	15
Wire bundle		
. STH-STB	SE1560	08
. STH-STB	SE1765	08
. STB-loudspeakers	SE1784	10
. Mains cable SCS-STB	SE1785	08
. Tweeter/Woofer	SE1791	08
. SCS-STEQ	SE1808	11
. XS0474	SE1872	04
Mark SALORA	UA1886	09
Mark DIGITAL	UA1887	09
Lens	UA5018	03
Bottom	UA5019	08
Cover	UA502A	12
Battery cover	UA503A	06
Cover	UC2345	06
Interference protection	UC2608	06
Interference protection	UC2614	08
Fastening spring	UC3019	02
Battery spring	UC3127	03
Fastening for degaussing coil	UG0267	02
Support plug	UG0290	02
LED raiser	UG0576	02
Lead band	UJ0134	01
Protection for capacitor	UJ0156	02
Pushbutton	UT0992	03

Description	Code	PG
Resistor		
. 33R . . J . 0W25	AA0637	01
. 39R . . J . 0W25	AA0639	01
. 56R . . J . 0W25	AA0643	01
. 68R . . J . 0W25	AA0645	01
. 82R . . J . 0W25	AA0647	01
. 100R . J . 0W25	AA0649	01
. 150R . J . 0W25	AA0653	01
. 180R . J . 0W25	AA0655	01
. 270R . J . 0W25	AA0659	01
. 390R . J . 0W25	AA0663	01
. 470R . J . 0W25	AA0665	01
. 560R . J . 0W25	AA0667	01
. 680R . J . 0W25	AA0669	01
. 820R . J . 0W25	AA0671	01
. 1k0 . . J . 0W25	AA0673	01
. 1k2 . . J . 0W25	AA0675	01
. 1k5 . . J . 0W25	AA0677	01
. 1k8 . . J . 0W25	AA0679	01
. 2k2 . . J . 0W25	AA0681	01
. 2k7 . . J . 0W25	AA0683	01
. 3k3 . . J . 0W25	AA0685	01
. 3k9 . . J . 0W25	AA0687	01
. 4k7 . . J . 0W25	AA0689	01
. 5k6 . . J . 0W25	AA0691	01
. 8k2 . . J . 0W25	AA0695	01
. 10k . . J . 0W25	AA0697	01
. 12k . . J . 0W25	AA0699	01
. 15k . . J . 0W25	AA0701	01
. 18k . . J . 0W25	AA0703	01
. 22k . . J . 0W25	AA0705	01
. 27k . . J . 0W25	AA0707	01
. 33k . . J . 0W25	AA0709	01
. 47k . . J . 0W25	AA0713	01
. 68k . . J . 0W25	AA0717	01
. 82k . . J . 0W25	AA0719	01
. 100k . J . 0W25	AA0721	01
. 150k . J . 0W25	AA0725	01
. 180k . J . 0W25	AA0727	01
. 220k . J . 0W25	AA0729	01
. 270k . J . 0W25	AA0731	01
. 330k . J . 0W25	AA0733	01
. 470k . J . 0W25	AA0737	01
. 1M0 . . J . 0W25	AA0745	01
. 4M7 . . J . 0W25	AA0761	01
. 0R22 . J . 0W25	AB0585	01
. 1R0 . . J . 0W25	AB0601	01
. 1R8 . . J . 0W25	AB0607	01
. 4R7 . . J . 0W25	AB0617	01
. 10R . . J . 0W25	AB0625	01
. 12R . . J . 0W25	AB0627	01
. 22R . . J . 0W25	AB0633	01
. 33R . . J . 0W25	AB0637	01
. 100R . J . 0W25	AB0649	01
. 220R . J . 0W25	AB0657	01
. 1k0 . . J . 0W25	AB0673	01
CHIP		
. 4R7 . . J . 0W12	AC8617	01
. 10R . . J . 0W12	AC8625	01
. 100R . J . 0W12	AC8649	01
. 390R . J . 0W12	AC8663	01
. 470R . J . 0W12	AC8665	01
. 680R . J . 0W12	AC8669	01
. 1k0 . . J . 0W12	AC8673	01
. 1K2 . . J . 0W12	AC8675	01
. 1K5 . . J . 0W12	AC8677	01
. 1K8 . . J . 0W12	AC8679	01
. 2K2 . . J . 0W12	AC8681	01
. 2K7 . . J . 0W12	AC8683	01
. 3K3 . . J . 0W12	AC8685	01
. 4k7 . . J . 0W12	AC8689	01
. 5k6 . . J . 0W12	AC8691	01
. 6K8 . . J . 0W12	AC8693	01
. 10k . . J . 0W12	AC8697	01
. 12k . . J . 0W12	AC8699	01
. 22k . . J . 0W12	AC8705	01
. 39K . . J . 0W12	AC8711	01
. 47k . . J . 0W12	AC8713	01
. 100k . J . 0W12	AC8721	01
. 150K . J . 0W12	AC8725	01
. 220k . J . 0W12	AC8729	01
. 1M0 . . J . 0W12	AC8745	01
. JUMPER . . 0W12	AC8799	01
. 1k0 . . K . 0W5	AD0373	01
. 1k5 . . K . 0W5	AD0377	01
. 8M2 . . K . 0W5	AD1967	01

Description	Code	PG
. 390K . K . 0W25	AD2735	01
. 1M0 . K . 0W25	AD2745	01
. 332K . F . 0W5	AG0933	01
. 1R00 . F . 0W5	AG3101	01
. 1R54 . F . 0W5	AG3119	01
. 12R1 . F . 0W5	AG3209	01
. 15R4 . F . 0W5	AG3219	01
. 33R2 . F . 0W5	AG3251	01
. 14k0 . F . 0W5	AG3515	01
. 15K4 . F . 0W5	AG3519	01
. 20k0 . F . 0W5	AG3530	01
. 46k4 . F . 0W5	AG3565	01
. 82k5 . F . 0W5	AG3589	01
. 100k . F . 0W5	AG3601	01
. 215k . F . 0W5	AG3633	01
. 274k . F . 0W5	AG3643	01
. 2R2 . . K . 5W-C-3	AJ0088	04
. 39R . . J . 2W0	AJ2663	02
. 56R . . J . 2W0	AJ2703	02
. 22k . . J . 2W0	AJ3323	02
. 100k . J . 2W0	AJ3483	02
. 22K H10	AQ2350	03
DUAL-PTC PTH 451 C02	AW0034	08
Capacitor		
. 3P3 . . C . 50V	CB0192	01
. 10P . . J . 50V	CB0292	01
. 15P . . J . 50V	CB0352	01
. 18P . . J . 50V	CB0382	01
. 100P . G . 63V	CB0671	01
. 100P . J . 50V	CB0673	01
. 180P . J . 50V	CB0772	01
. 220P . J . 50V	CB0792	01
CHIP		
. 6P8 . . D . 50V	CB4121	01
. 15P . . J . 50V	CB4129	01
. 18P . . J . 50V	CB4131	02
. 22P . . J . 50V	CB4133	01
. 27P . . J . 50V	CB4135	02
. 47P . . J . 50V	CB4141	02
. 56P . . J . 50V	CB4143	02
. 68P . . J . 50V	CB4145	02
. 100P . J . 50V	CB4151	02
. 150P . J . 50V	CB4155	02
. 220P . J . 50V	CB4159	02
. 330P . J . 50V	CB4163	02
. 470P . J . 50V	CB4167	02
. 560P . J . 50V	CB4169	02
. 47P . . J . 50V	CB4738	02
. 150P . K . 500V	CC0110	01
. 330P . K . 500V	CC0150	01
. 470P . K . 50V	CC0174	01
. 1N0 . K . 50V	CC0204	01
. 1N5 . K . 50V	CC0224	01
. 3N3 . S . 1KV	CC0513	02
. 4N7 . Z . 50V	CC0750	01
. 10N . Z . 50V	CC0772	01
. 22N . Z . 50V	CC0795	01
. 100N Z . 25V	CC0853	02
. 1N0 . K . 50V	CC4200	01
. 1N5 . K . 50V	CC4220	02
. 1N8 . K . 50V	CC4230	01
. 2N2 . K . 50V	CC4240	02
. 3N3 . K . 50V	CC4260	02
. 4N7 . K . 50V	CC4280	02
. 6N8 . K . 50V	CC4300	01
. 10N . K . 50V	CC4320	02
. 22N . Z . 25V	CC4795	02
. 100N Z . 25V	CC4855	03
. 2N2 . M 400VAC	CE0116	05
. 100N M 250VAC	CE0210	04
. 680P . K . 1k5V	CE2074	04
. 1N5 . K . 1k5V	CE2154	04
. 5N6 . J . 1k5V	CE2304	04
. 5N9 . J . 1K6V	CE2314	05
. 420N J . 250V	CE3092	06
. 3N3 . H . 63V	CG2623	03
. 22N . K . 630V	CK0165	02
. 100N K . 100V	CK0282	02
. 100N K . 250V	CK0284	02
. 1U5 . K . 100V	CK0477	04
. 2U2 . K . 250V	CK0494	06
. 6U8 . K . 100V	CK0542	09
. 33N . K . 250V	CK1508	02
. 10N . K . 63V	CK2384	02
. 22N . K . 63V	CK2464	02

SPARE PARTS LIST 21M87 NICAM

Description	Code	PG
. 33N . . K . 63V	CK2504	02
. 68N . . K . 50V	CK2584	02
. 100N . K . 63V	CK2626	03
. 150N . K . 63V	CK2664	02
. 220N . K . 63V	CK2704	03
. 470N . K . 63V	CK2784	02
. 220U . M . 385V	CN0087	16
. 1U0 . . M . 50V	CN0150	02
. 1U0 . . M . 50V	CN0154	02
. 2U2 . . . . . 63V	CN0201	03
. 2U2 . . M . 50V	CN0204	02
. 2U2 . . T . 350V	CN0207	03
. 4U7 . . M . 35V	CN0258	02
. 10U . . M . 35V	CN0308	02
. 22U . . M . 16V	CN0370	03
. 22U . . Z . 35V	CN0372	03
. 47U . . T . 35V	CN0422	03
. 47U . . Z . 35V	CN0423	03
. 220U . S . 16V	CN0519	03
. 470U . T . 16V	CN0604	03
. 470U . M . 16V	CN0617	03
. 2200U T . 25V	CN0817	06
. 0U47 . M . 50V	CN2012	02
. 100U 25V	CN2521	03
. 220U . M . 40V	CN2589	04
. 100U 16V	CN2711	04
. 1P6/15P	CW0153	04
. 5P2/30P	CW0155	04
Choke		
. 8.4uH	FJ0149	06
. 90uH	FJ0284	05
. SPT 0406-330K6	FJ0429	04
. 15uH	FJ0448	04
. 1UH	FJ0464	04
High-response choke 4u7H	FJ0478	03
Choke		
. 4uH	FJ0484	03
. SPT 0406 150K-6	FJ0505	03
. 1MH	FJ0516	03
Air coil	FJ0534	01
Choke 5UH	FJ1340	03
Interference choke 2x33mH	FJ1470	12
Diode-split	FM0513	30
Coil		
. KXNAS-K5881 GI	FU0466	05
. SNAS-100073	FU0565	04
. 5VFQ 6.552MHZ	FU0567	13
Combicoil	FU1026	15
Diode		
. BY 133	JB0030	03
. BY 228	JB0034	05
. BY 448	JB0041	08
. 1N 4148	JF0025	01
. RGP 10M-7011	JF0038	02
. 1N 002	JF0060	02
. BA 159	JF0062	03
. BAV 21	JF0072	03
. RGP10G	JF0073	03
. RGP 15J	JF0074	03
. PE 2D	JF0106	03
. OF 799	JF0114	03
. BYV 95C	JF0124	03
. BAT 18	JF4001	03
. BAV 70	JF4002	02
. BZX 83C12	JH0054	03
. BZX 83C6V2	JH0057	03
. BZX 83C30	JH0079	02
. BZX 83C5V1	JH0087	02
. BZX 85C4V7	JH0102	02
. BZX 84C5V1	JH4109	03
. BZX 84C5V6	JH4110	02
. BB 204 B	JK0057	05
LED		
. TLUR 4401 M	JL0005	03
. G 314 N-3	JL0006	04
. BPW 50	JL0020	12
. CQY 89A-2	JL0021	06
. 7-seg LTD-4606R-NB	JL0050	12
Transistor		
. BC 547 B	JM0099	03
. BC 557 B	JM0100	03
. BF 871	JM0219	05
. BF 422	JM0244	04
. MPS 222 2A	JM0253	05
. 2 SD 1577	JM0264	13
. BC 368	JM0281	04

Description	Code	PG
. BC 369	JM0282	06
. R 4060	JM0283	12
. BC 550	JM0303	02
. BF 421	JM0321	03
. BCW 60 B	JM4106	04
. BC 857 B	JM4114	02
FET BS 208	JS0017	07
Silicondielectric	JZ0010	08
Focus	LF0057	10
VTR control 3	LF0069	13
Ipsalo circuit 4	LF0070	22
IC		
. TBA 120 U	LM0045	09
. SAA 1250	LM0230	20
. LM 339 N	LM0255	10
. MC 7812 CT R	LM0256	10
. TDA 2040	LM0340	14
. TBA 2800	LM0399	09
. MEA 2901	LM0401	12
. CD 4052 B	LM0530	07
. TMM 4164 AP-20	LM0550	15
. LM 2940 CT-5.0 5V	LM0603	11
. TDA 8172	LM0604	13
. MCU 2632	LM0607	11
. VPU 2203	LM0609	18
. TDA 2822 M	LM0623	09
. X 2404	LM0631	24
. TA 8662 N	LM0673	32
. TD 6720 N	LM0688	22
. TC 6011 N	LM0689	29
. TMM 2063P-10	LM0690	22
. DTI 2223	LM0709	20
. TPU 2734	LM0714	29
. CCU-SALO-07	LM0716	22
. ADC 2301 E	LM0721	13
. VCU 2133 A	LM0722	20
. DPU 2553 S	LM0723	20
. APU 2471 S	LM0735	
. 4053 B	LM4101	07
. CD 4052 PT	LM4102	06
. CD 4093 BT	LM4103	05
. 1458	LM4401	06
. TDA 7021 T	LM5003	14
. PCF 8574 T	LM5004	16
IC-socket		
. C 830802	LZ0003	03
. C 832402	LZ0036	05
. C 834002	LZ0050	08
Crystal		
. 5,824 MHZ HC-49/U	QA0081	07
. 6,552 MHZ HC-49/U	QA0083	31
. 17,734475 MHz HC-49/U	QA0089	08
. 67,73760 MHZ HC-49/U	QA0090	19
Ceramic filter SFE 6,0 MBF	QA0118	04
Crystal 4.000MHz	QA0139	09
Mains Switch	QG0265	11
Keybad	QG0281	12
Connector RTM 1,3/5/8.002	QK0851	01
Connector 3645-13-13	QK0954	05
Connector for picture tube socket	QK1014	12
Connector		
. MKF 1516-1-0-1616 STEQ19	QK1073	06
. MKS 1854-1-0-404 Q14	QK1134	02
. MKS 1954-1-0-404 Q16	QK1224	02
. MKS 1955-1-0-505 Q18	QK1225	02
. MKS 1956-1-0-606 Q9	QK1226	03
. MKS 1957-1-0-707 Q17	QK1227	02
. MKS 1960-1-0-1010	QK1230	03
. MKS 1963-1-0-1313 Q5	QK1233	03
. MKS 1966-1-0-1616 Q19	QK1236	03
. MKS 1970-1-0-2020 Q8	QK1240	04
. MKS 2770-1-0-2020 SCS8	QK1280	05
. MKS 2822-1-1-202 SCS30	QK1282	02
Extra loudspeaker connector		
. TCS 9003-01-1011 Q20	QK1327	05
SCART-connector 1234-21-21 Q1	QK1349	07
Antenna connector	QK1407	07
Feed through socket	QK1415	01
Connector		
. 3,5MM ST HSJ-1061-01-440 Q4	QK1427	05
. MKS 2954-1-0-404 SCS14	QK1454	03
. MKS 2956-1-0-606 SCS25	QK1456	03
. 2,5 MKF 1510-1-0-1010	QK1478	05
Fuse holder RFS 5620	QT0102	01
Fuse T2,0A/250V	QT0717	02
Battery 9V	SA0016	06

Description	Code	PG
Wire bundle SCS-STS	SE1108	15
Wire bundle Deflection coil	SE1524	08
Mains cable	SE1525	15
Short circuit wire	SE1526	01
Wire bundle		
. STH-STB	SE1560	08
. STH-STB	SE1765	08
. STB-loudspeakers	SE1784	10
. Mains cable SCS-STB	SE1785	08
. Tweeter	SE1791	08
. SCS-STEQ	SE1808	11
Short circuit wire	SE1902	04
Short circuit wire	SE1941	04
Short circuit wire	SE1951	04
Mark SALORA	UA1886	09
Mark DIGITAL	UA1887	09
Lens	UA5018	03

Description	Code	PG
Bottom	UA5019	08
Cover	UA502A	12
Battery cover	UA503A	06
Bracket tuner	UC2295	02
Bracket	UC2343	02
Body	UC2344	08
Cover	UC2345	05
Interference protector	UC2608	06
Interference protector	UC2614	08
Fastening spring	UC3019	02
Battery spring	UC3127	03
Fastening for degaussing coil	UG0267	02
Support plug	UG0290	02
LED raiser	UG0576	02
Lead band	UJ0134	01
Protection for capacitor	UJ0156	02
Push button	UT0992	03

Description	Code	PG
Resistor		
. 33R . . J . 0W25	AA0637	01
. 39R . . J . 0W25	AA0639	01
. 56R . . J . 0W25	AA0643	01
. 68R . . J . 0W25	AA0645	01
. 82R . . J . 0W25	AA0647	01
. 100R . J . 0W25	AA0649	01
. 150R . J . 0W25	AA0653	01
. 180R . J . 0W25	AA0655	01
. 270R . J . 0W25	AA0659	01
. 390R . J . 0W25	AA0663	01
. 470R . J . 0W25	AA0665	01
. 560R . J . 0W25	AA0667	01
. 680R . J . 0W25	AA0669	01
. 820R . J . 0W25	AA0671	01
. 1k0 . . J . 0W25	AA0673	01
. 1k2 . . J . 0W25	AA0675	01
. 1k5 . . J . 0W25	AA0677	01
. 1k8 . . J . 0W25	AA0679	01
. 2k2 . . J . 0W25	AA0681	01
. 2k7 . . J . 0W25	AA0683	01
. 3k3 . . J . 0W25	AA0685	01
. 3k9 . . J . 0W25	AA0687	01
. 4k7 . . J . 0W25	AA0689	01
. 5k6 . . J . 0W25	AA0691	01
. 6k8 . . J . 0W25	AA0693	01
. 8k2 . . J . 0W25	AA0695	01
. 10k . . J . 0W25	AA0697	01
. 12k . . J . 0W25	AA0699	01
. 15k . . J . 0W25	AA0701	01
. 18k . . J . 0W25	AA0703	01
. 22k . . J . 0W25	AA0705	01
. 27k . . J . 0W25	AA0707	01
. 33k . . J . 0W25	AA0709	01
. 47k . . J . 0W25	AA0713	01
. 68k . . J . 0W25	AA0717	01
. 82k . . J . 0W25	AA0719	01
. 100k . J . 0W25	AA0721	01
. 150k . J . 0W25	AA0725	01
. 180k . J . 0W25	AA0727	01
. 220k . J . 0W25	AA0729	01
. 270k . J . 0W25	AA0731	01
. 330k . J . 0W25	AA0733	01
. 470k . J . 0W25	AA0737	01
. 1M0 . . J . 0W25	AA0745	01
. 4M7 . . J . 0W25	AA0761	01
. 0R22 . J . 0W25	AB0585	01
. 1R0 . . J . 0W25	AB0601	01
. 1R8 . . J . 0W25	AB0607	01
. 4R7 . . J . 0W25	AB0617	01
. 10R . . J . 0W25	AB0625	01
. 12R . . J . 0W25	AB0627	01
. 22R . . J . 0W25	AB0633	01
. 33R . . J . 0W25	AB0637	01
. 100R . J . 0W25	AB0649	01
. 220R . J . 0W25	AB0657	01
. 1k0 . . J . 0W25	AB0673	01
CHIP		
. 4R7 . . J . 0W12	AC8617	01
. 10R . . J . 0W12	AC8625	01
. 100R . J . 0W12	AC8649	01
. 390R . J . 0W12	AC8663	01
. 470R . J . 0W12	AC8665	01
. 680R . J . 0W12	AC8669	01
. 1k0 . . J . 0W12	AC8673	01
. 1K2 . . J . 0W12	AC8675	01
. 1K5 . . J . 0W12	AC8677	01
. 1K8 . . J . 0W12	AC8679	01
. 2K2 . . J . 0W12	AC8681	01
. 2K7 . . J . 0W12	AC8683	01
. 3K3 . . J . 0W12	AC8685	01
. 4k7 . . J . 0W12	AC8689	01
. 5k6 . . J . 0W12	AC8691	01
. 6K8 . . J . 0W12	AC8693	01
. 10k . . J . 0W12	AC8697	01
. 12k . . J . 0W12	AC8699	01
. 22k . . J . 0W12	AC8705	01
. 39K . . J . 0W12	AC8711	01
. 47k . . J . 0W12	AC8713	01
. 100k . J . 0W12	AC8721	01
. 150K . J . 0W12	AC8725	01
. 220k . J . 0W12	AC8729	01
. 1M0 . . J . 0W12	AC8745	01
. JUMPER . . 0W12	AC8799	01
. 1k0 . . K . 0W5	AD0373	01
. 1k5 . . K . 0W5	AD0377	01

Description	Code	PG
. 8M2 . K . 0W5	AD1967	01
. 390K . K . 0W25	AD2735	01
. 1M0 . K . 0W25	AD2745	01
. 332K . F . 0W5	AG0933	01
. 1R00 . F . 0W5	AG3101	01
. 1R54 . F . 0W5	AG3119	01
. 12R1 . F . 0W5	AG3209	01
. 15R4 . F . 0W5	AG3219	01
. 33R2 . F . 0W5	AG3251	01
. 12k1 . F . 0W5	AG3509	03
. 15K4 . F . 0W5	AG3519	01
. 20k0 . F . 0W5	AG3530	01
. 46k4 . F . 0W5	AG3565	01
. 82k5 . F . 0W5	AG3589	01
. 100k . F . 0W5	AG3601	01
. 274k . F . 0W5	AG3643	01
. 2R2 . . K . 5W-C-3	AJ0088	04
. 39R . . J . 2W0	AJ2663	02
. 56R . . J . 2W0	AJ2703	02
. 22k . . J . 2W0	AJ3323	02
. 100k . J . 2W0	AJ3483	02
. 22K H10	AQ2350	03
DUAL-PTC PTH 451 C02	AW0034	08
Capacitor		
. 3P3 . . C . 50V	CB0192	01
. 10P . . J . 50V	CB0292	01
. 15P . . J . 50V	CB0352	01
. 18P . . J . 50V	CB0382	01
. 100P . G 63V	CB0671	01
. 100P . J . 50V	CB0673	01
. 180P . J . 50V	CB0772	01
. 220P . J . 50V	CB0792	01
CHIP		
. 6P8 . . D . 50V	CB4121	01
. 15P . . J . 50V	CB4129	01
. 18P . . J . 50V	CB4131	02
. 22P . . J . 50V	CB4133	01
. 27P . . J . 50V	CB4135	02
. 47P . . J . 50V	CB4141	02
. 56P . . J . 50V	CB4143	02
. 68P . . J . 50V	CB4145	02
. 100P . J . 50V	CB4151	02
. 150P . J . 50V	CB4155	02
. 220P . J . 50V	CB4159	02
. 330P . J . 50V	CB4163	02
. 470P . J . 50V	CB4167	02
. 560P . J . 50V	CB4169	02
. 47P . . J . 50V	CB4738	02
. 150P . K . 500V	CC0110	01
. 330P . K . 500V	CC0150	01
. 470P . K . 50V	CC0174	01
. 1N0 . K . 50V	CC0204	01
. 1N5 . K . 50V	CC0224	01
. 3N3 . S . 1KV	CC0513	02
. 4N7 . Z . 50V	CC0750	01
. 10N . Z . 50V	CC0772	01
. 22N . Z . 50V	CC0795	01
. 100N Z . 25V	CC0853	02
. 1N0 . K . 50V	CC4200	01
. 1N5 . K . 50V	CC4220	02
. 1N8 . K . 50V	CC4230	01
. 2N2 . K . 50V	CC4240	02
. 3N3 . K . 50V	CC4260	02
. 4N7 . K . 50V	CC4280	02
. 6N8 . K . 50V	CC4300	01
. 10N . K . 50V	CC4320	02
. 22N . Z . 25V	CC4795	02
. 100N Z . 25V	CC4855	03
. 2N2 . M 400VAC	CE0116	05
. 100N M 250VAC	CE0210	04
. 680P . K . 1k5V	CE2074	04
. 5N9 . J . 1K6V	CE2314	05
. 8N2 . J . 1K5V	CE2344	06
. 250N J . 250V	CE3035	05
. 2U2 . J . 100V	CE3303	08
. 3N3 . H . 63V	CG2623	03
. 22N . K . 630V	CK0165	02
. 100N K . 100V	CK0282	02
. 100N K . 250V	CK0284	02
. 2U2 . K . 250V	CK0494	06
. 6U8 . K . 100V	CK0542	09
. 33N . K . 250V	CK1508	02
. 10N . K . 63V	CK2384	02
. 22N . K . 63V	CK2464	02
. 33N . K . 63V	CK2504	02

SPARE PARTS LIST 25M87, 28M87 NICAM

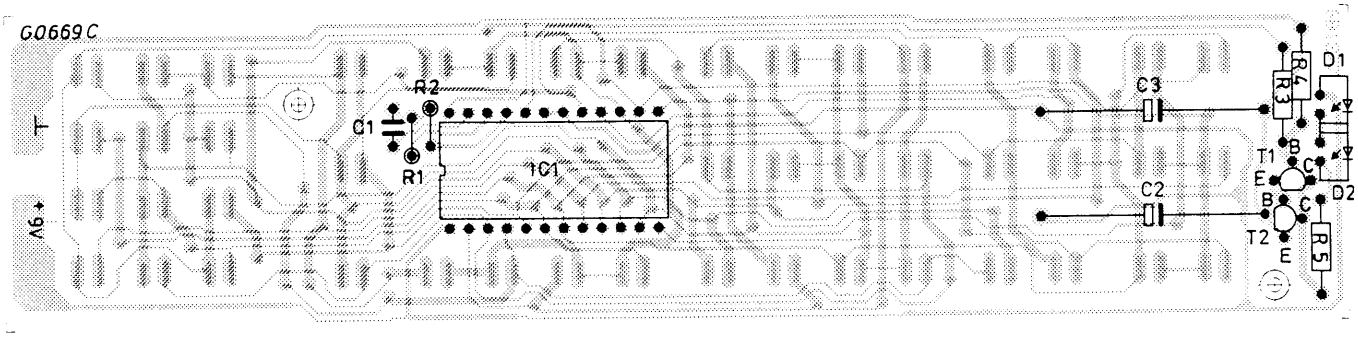
Description	Code	PG
. 47N .. K . 63V	CK2544	02
. 68N .. K . 50V	CK2584	02
. 100N . K . 63V	CK2626	03
. 150N . K . 63V	CK2664	02
. 220N . K . 63V	CK2704	03
. 470N . K . 63V	CK2784	02
. 220U . M . 385V	CN0087	16
. 1U0 .. M . 50V	CN0150	02
. 1U0 .. M . 50V	CN0154	02
. 2U2 ..... 63V	CN0201	03
. 2U2 .. M . 50V	CN0204	02
. 2U2 .. T . 350V	CN0207	03
. 4U7 .. M . 35V	CN0258	02
. 10U .. M . 35V	CN0308	02
. 22U .. M . 16V	CN0370	03
. 22U .. Z . 35V	CN0372	03
. 47U .. T . 35V	CN0422	03
. 47U .. Z . 35V	CN0423	03
. 220U . S . 16V	CN0519	03
. 470U . T . 16V	CN0604	03
. 470U . M . 16V	CN0617	03
. 2200U T . 25V	CN0817	06
. 0U47 . M . 50V	CN2012	02
. 100U 25V	CN2521	03
. 220U . M . 40V	CN2589	04
. 100U 16V	CN2711	04
. 1P6/15P	CW0153	04
. 5P2/30P	CW0155	04
Choke		
. 8.4uH	FJ0149	06
. 90uH	FJ0284	05
. SPT 0406-330K6	FJ0429	04
. 15uH	FJ0448	04
. 1UH	FJ0464	04
High-response choke 4u7H	FJ0478	03
Choke		
. 4uH	FJ0484	03
. SPT 0406 150K-6	FJ0505	03
. 1MH	FJ0516	03
Air coil	FJ0534	01
Choke 5UH	FJ1340	03
Interference choke 2x33mH	FJ1470	12
Diode-split	FM0513	30
Coil		
. KXNAS-K5881 GI	FU0466	05
. SNAS-100073	FU0565	04
. 5VFQ 6.552MHZ	FU0567	13
Combicoil	FU1026	15
Diode		
. BY 133	JB0030	03
. BY 228	JB0034	05
. BY 448	JB0041	08
. 1N 4148	JF0025	01
. RGP 10M-7011	JF0038	02
. 1N 002	JF0060	02
. BA 159	JF0062	03
. BAV 21	JF0072	03
. RGP10G	JF0073	03
. RGP 15J	JF0074	03
. PE 2D	JF0106	03
. OF 799	JF0114	03
. BYV 95C	JF0124	03
. BAT 18	JF4001	03
. BAV 70	JF4002	02
. BZX 83C12	JH0054	03
. BZX 83C6V2	JH0057	03
. BZX 83C30	JH0079	02
. BZX 83C5V1	JH0087	02
. BZX 85C4V7	JH0102	02
. BZX 84C5V1	JH4109	03
. BZX 84C5V6	JH4110	02
. BB 204 B	JK0057	05
LED TLUR 4401 M	JL0005	03
. G 314 N-3	JL0006	04
. BPW 50	JL0020	12
. CQY 89A-2	JL0021	06
7-seg LTD-4606R-NB	JL0050	12
Transistor		
. BC 547 B	JM0099	03
. BC 557 B	JM0100	03
. BF 871	JM0219	05
. BF 422	JM0244	04
. MPS 222 2A	JM0253	05
. 2 SD 1577	JM0264	13
. BC 368	JM0281	04
. BC 369	JM0282	06

Description	Code	PG
. R 4060	JM0283	12
. BC 550	JM0303	02
. BF 421	JM0321	03
. BCW 60 B	JM4106	04
. BC 857 B	JM4114	02
FET BS 208	JS0017	07
Silicondielectric	JZ0010	08
Focus	LF0058	10
VTR control 3	LF0069	13
Ipsalo circuit 4	LF0070	22
IC		
. TBA 120 U	LM0045	09
. SAA 1250	LM0230	20
. LM 339 N	LM0255	10
. MC 7812 CT R	LM0256	10
. TDA 2040	LM0340	14
. TBA 2800	LM0399	09
. MEA 2901	LM0401	12
. CD 4052 B	LM0530	07
. TMM 4164 AP-20	LM0550	15
. LM 2940 CT-5.0 5V	LM0603	11
. TDA 8172	LM0604	13
. MCU 2632	LM0607	11
. VPU 2203	LM0609	18
. TDA 2822 M	LM0623	09
. X 2404	LM0631	24
. TA 8662 N	LM0673	32
. TD 6720 N	LM0688	22
. TC 6011 N	LM0689	29
. TMM 2063P-10	LM0690	22
. DTI 2223	LM0709	20
. TPU 2734	LM0714	29
. CCU-SALO-07	LM0716	22
. ADC 2301 E	LM0721	13
. VCU 2133 A	LM0722	20
. DPU 2553 S	LM0723	20
. APU 2471 S	LM0735	
. 4053 B	LM4101	07
. CD 4052 PT	LM4102	06
. CD 4093 BT	LM4103	05
. 1458	LM4401	06
. TDA 7021 T	LM5003	14
. PCF 8574 T	LM5004	16
IC-socket		
. C 830802	LZ0003	03
. C 832402	LZ0036	05
. C 834002	LZ0050	08
Crystal		
. 5,824 MHZ HC-49/U	QA0081	07
. 6,552 MHZ HC-49/U	QA0083	31
. 17,734475 MHz HC-49/U	QA0089	08
. 67,73760 MHZ HC-49/U	QA0090	19
Ceramic filter SFE 6,0 MBF	QA0118	04
Crystal 4.000MHz	QA0139	09
Mains Switch	QG0265	11
Keybad	QG0281	12
Connector RTM 1,3/5/8.002	QK0851	01
Connector 3645-13-13	QK0954	05
Connector for picture tube socket	QK1014	12
Connector		
. MKF 1516-1-0-1616 STEQ19	QK1073	06
. MKS 1854-1-0-404 Q14	QK1134	02
. MKS 1954-1-0-404 Q16	QK1224	02
. MKS 1955-1-0-505 Q18	QK1225	02
. MKS 1956-1-0-606 Q9	QK1226	03
. MKS 1957-1-0-707 Q17	QK1227	02
. MKS 1960-1-0-1010	QK1230	03
. MKS 1963-1-0-1313 Q5	QK1233	03
. MKS 1966-1-0-1616 Q19	QK1236	03
. MKS 1970-1-0-2020 Q8	QK1240	04
. MKS 2770-1-0-2020 SCS8	QK1280	05
. MKS 2822-1-1-202 SCS30	QK1282	02
Extra loudspeaker connector		
. TCS 9003-01-1011 Q20	QK1327	05
SCART-connector 1234-21-21 Q1	QK1349	07
Antenna connector	QK1407	07
Feed through socket	QK1415	01
Connector		
. 3,5MM ST HSJ-1061-01-440 Q4	QK1427	05
. MKS 2954-1-0-404 SCS14	QK1454	03
. MKS 2956-1-0-606 SCS25	QK1456	03
. 2,5 MKF 1510-1-0-1010	QK1478	05
Fuse holder RFS 5620	QT0102	01
Fuse T2,0A/250V	QT0717	02
Wire bundle SCS-STS	SE1108	15
Wire bundle Deflection coil	SE1524	08

Description	Code	PG
Wire bundle		
. STH-STB	SE1560	08
. STH-STB	SE1765	08
. STB-loudspeakers	SE1784	10
. Mains cable SCS-STB	SE1785	08
. Tweeter	SE1791	08
. SCS-STEQ	SE1808	11
Mark SALORA	UA1886	09
Mark DIGITAL	UA1887	09
Lens	UA5018	03
Bottom	UA5019	08
Cover	UA502A	12
Battery cover	UA503A	06
Castor & screw pack	UB2265	99
Bracket tuner	UC2295	02
Bracket	UC2343	02

Description	Code	PG
Body	UC2344	08
Cover	UC2345	05
Interference protector	UC2608	06
Interface protector	UC2614	08
Fastening spring	UC3019	02
Battery spring	UC3127	03
Stand end, black	UF0105	99
Video table	UF0302	23
Fastening for degaussing coil	UG0267	02
Support plug	UG0290	02
LED raiser	UG0576	02
Lead band	UJ0134	01
Protection for capacitor	UJ0156	02
Push button	UT0992	03

P.C.B. Layout Pictures



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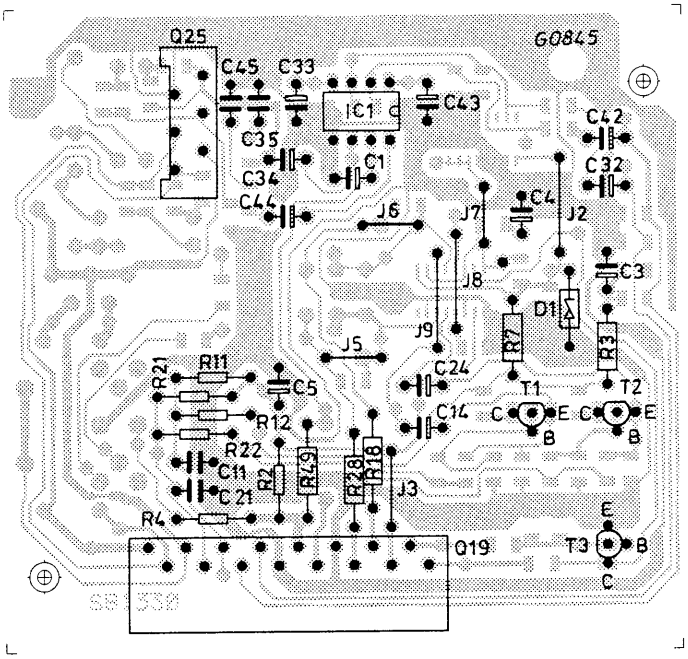

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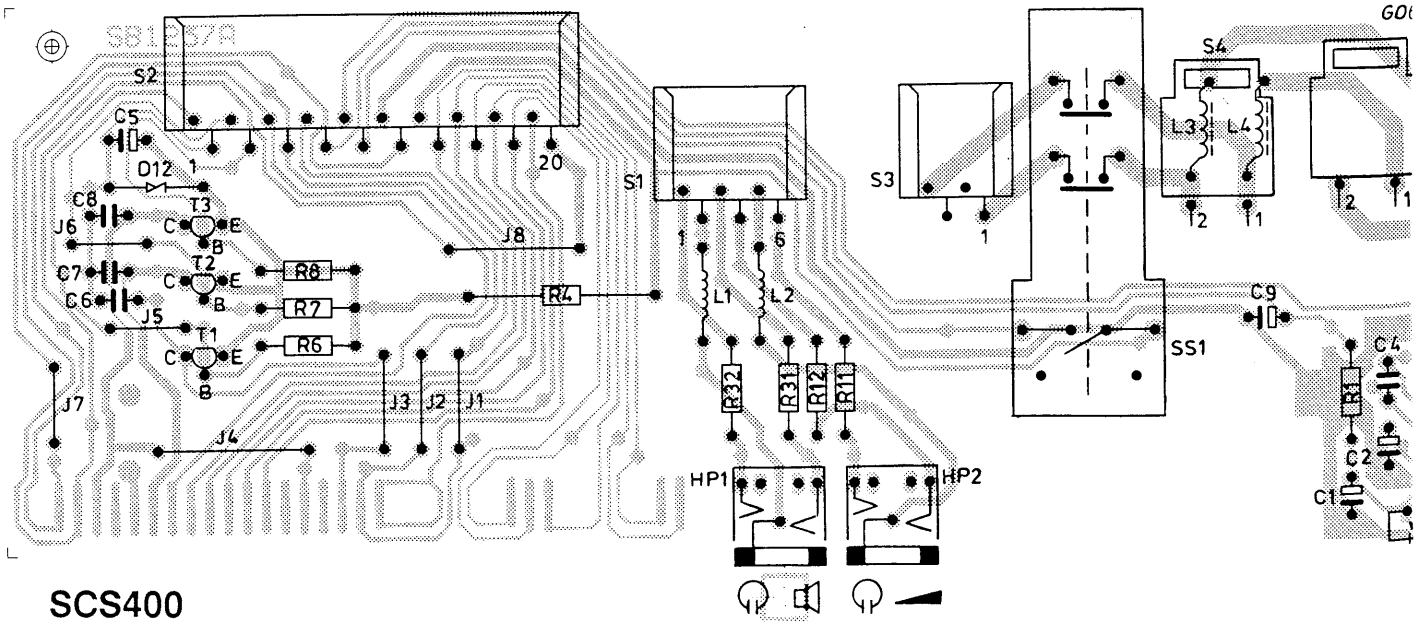
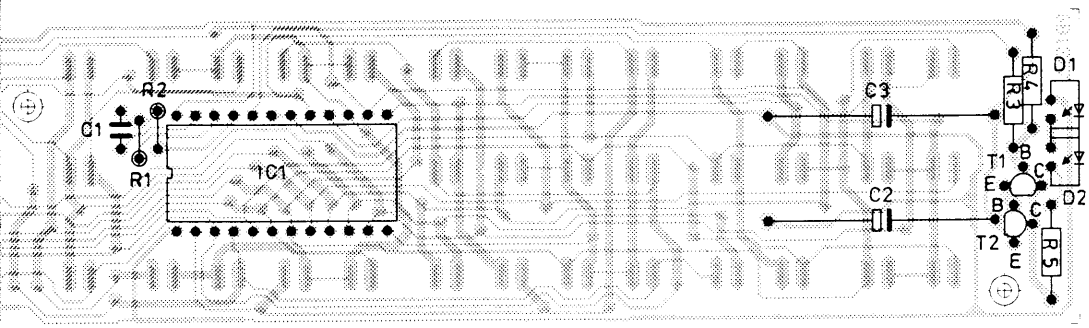
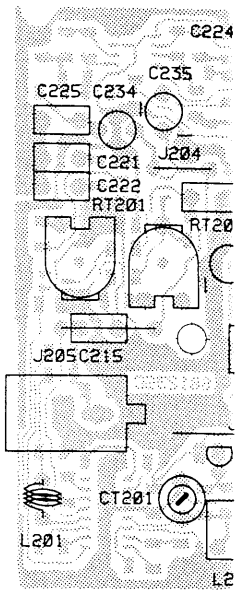


SCS400

P.C.B. Layout Pictures





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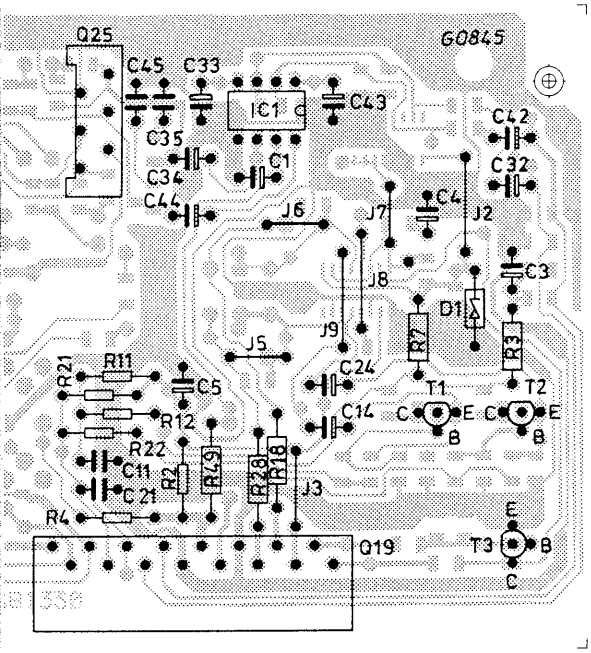

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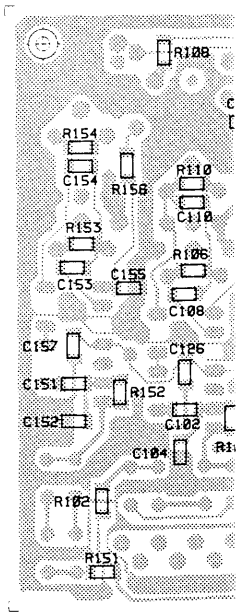

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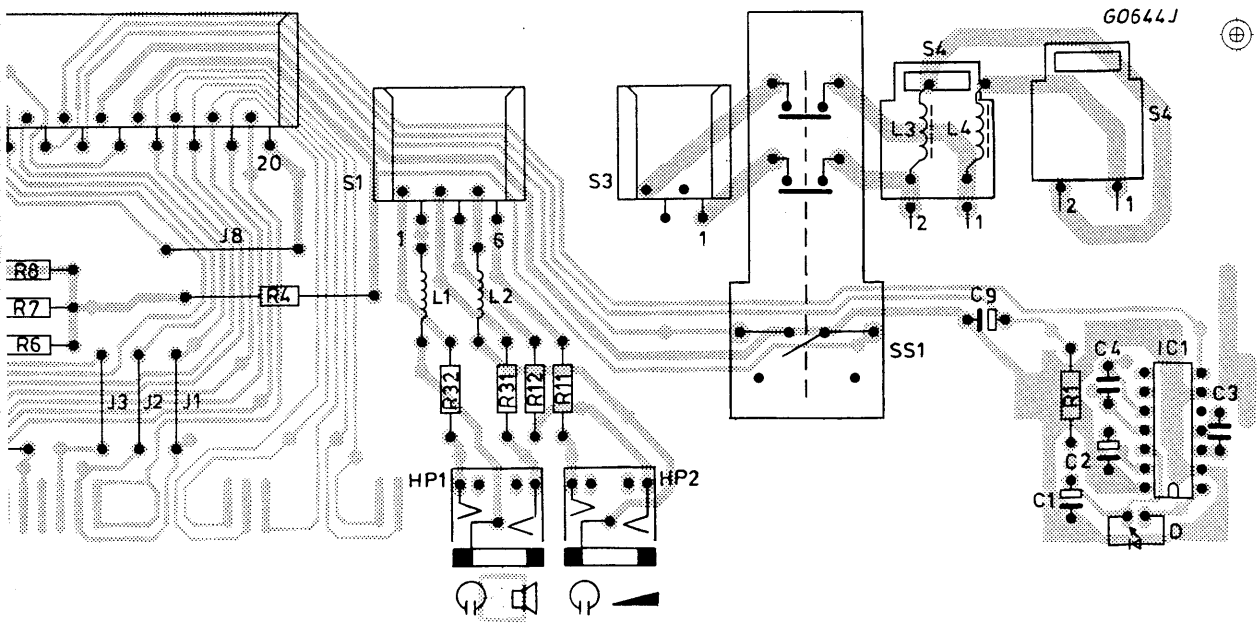

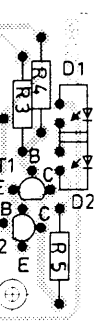

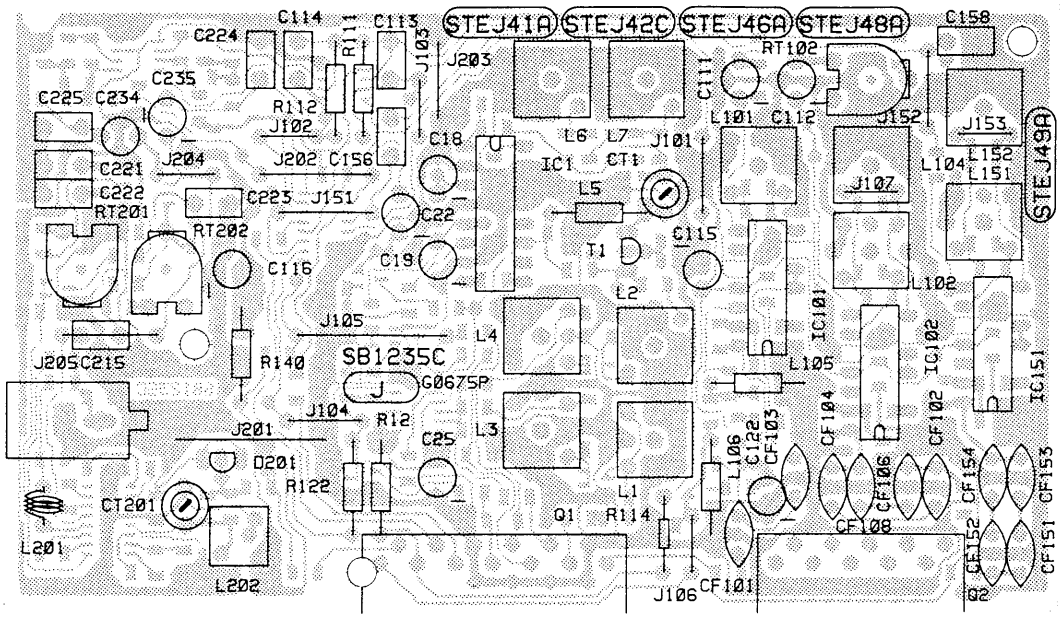

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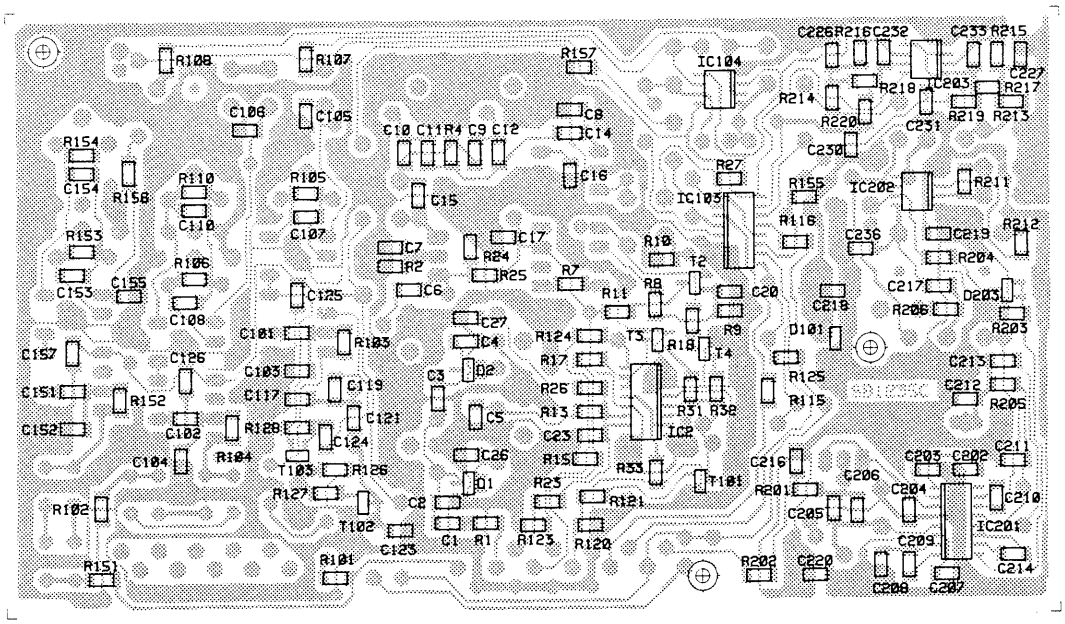
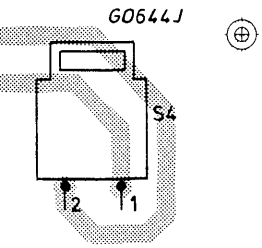
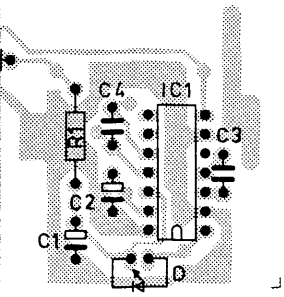
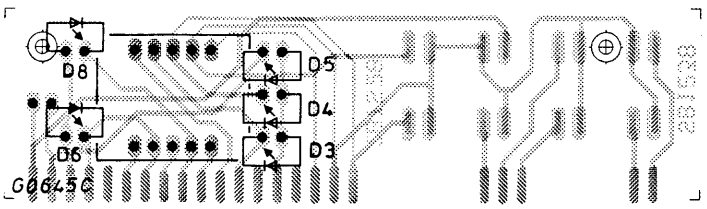


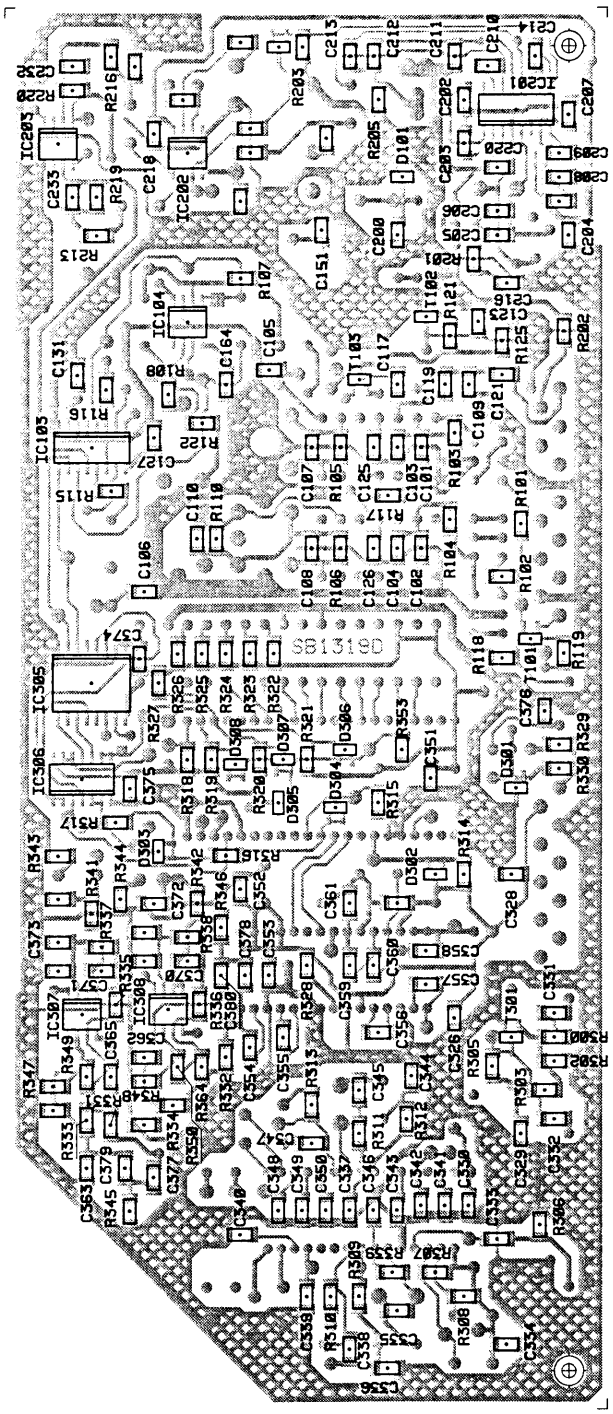
STEJ46 Chip Layout



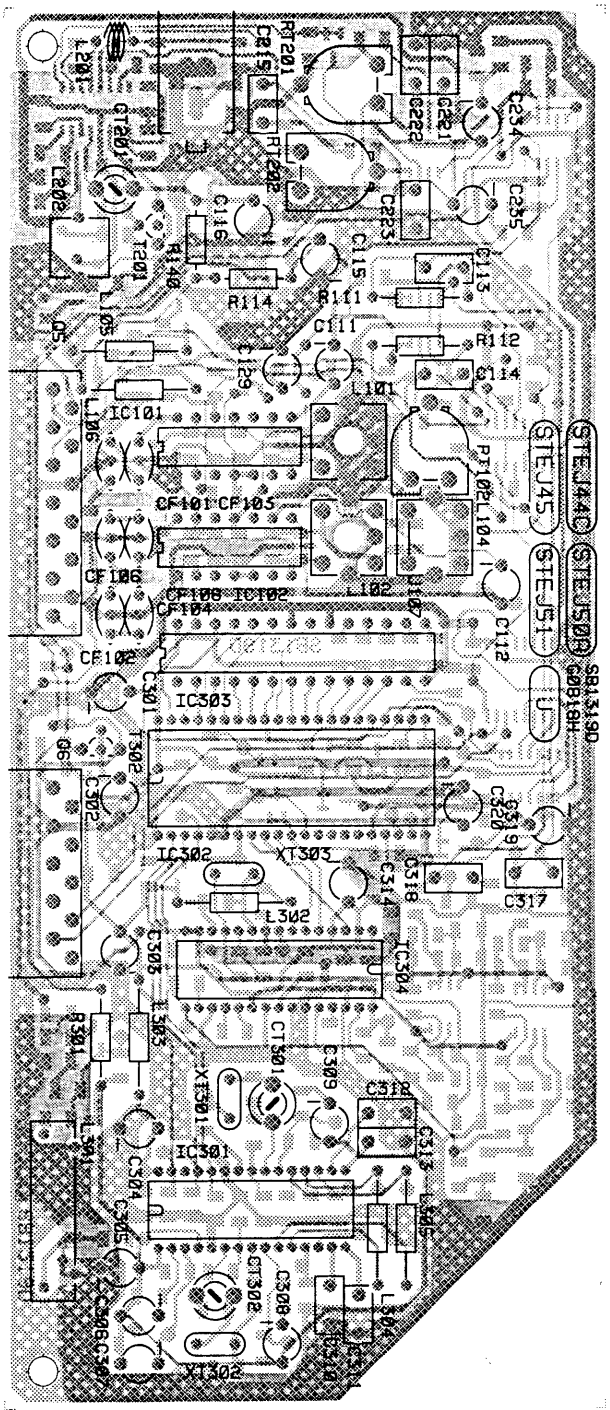




SCS400 Display Board



STEJ50 Chip Layout



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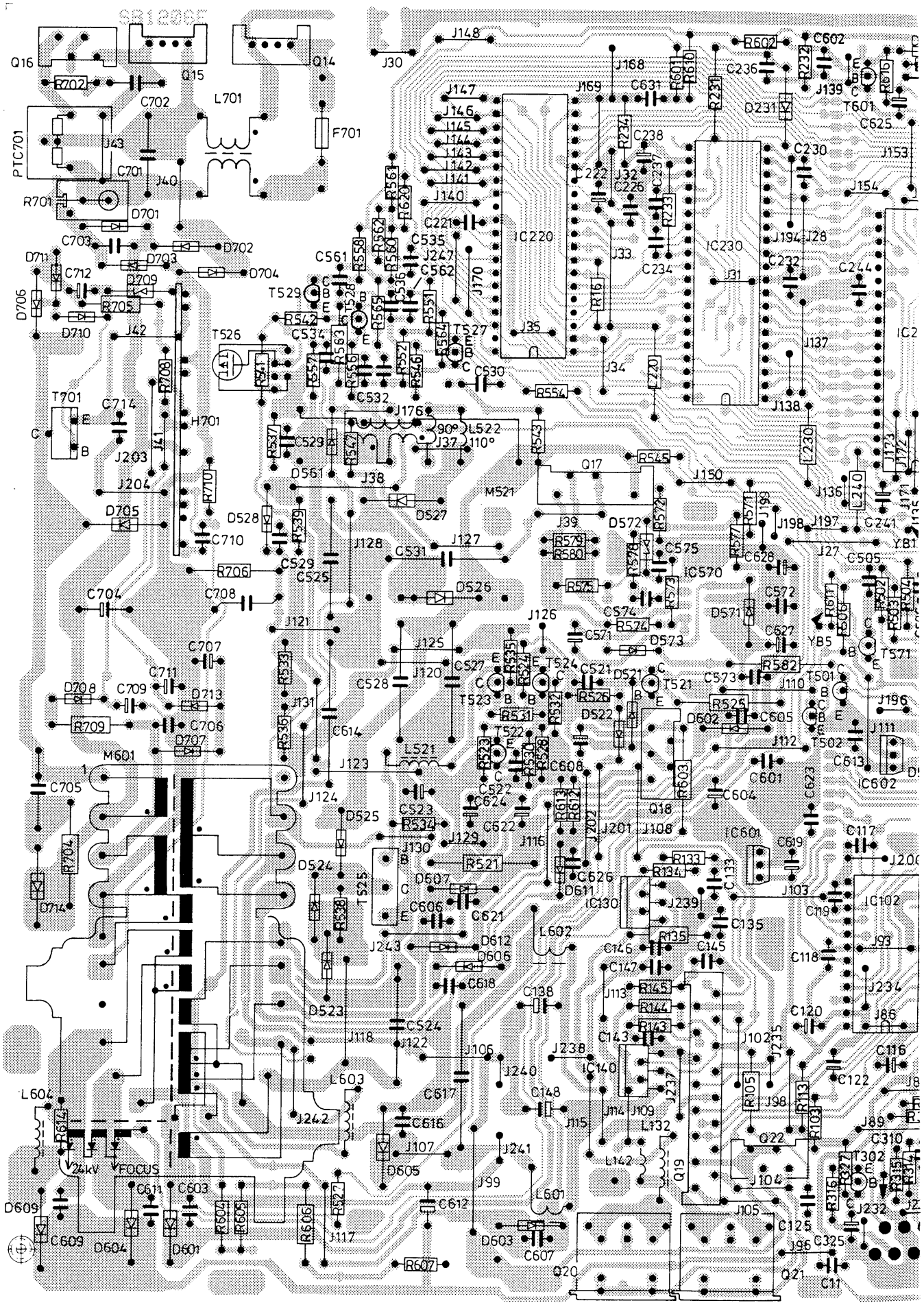
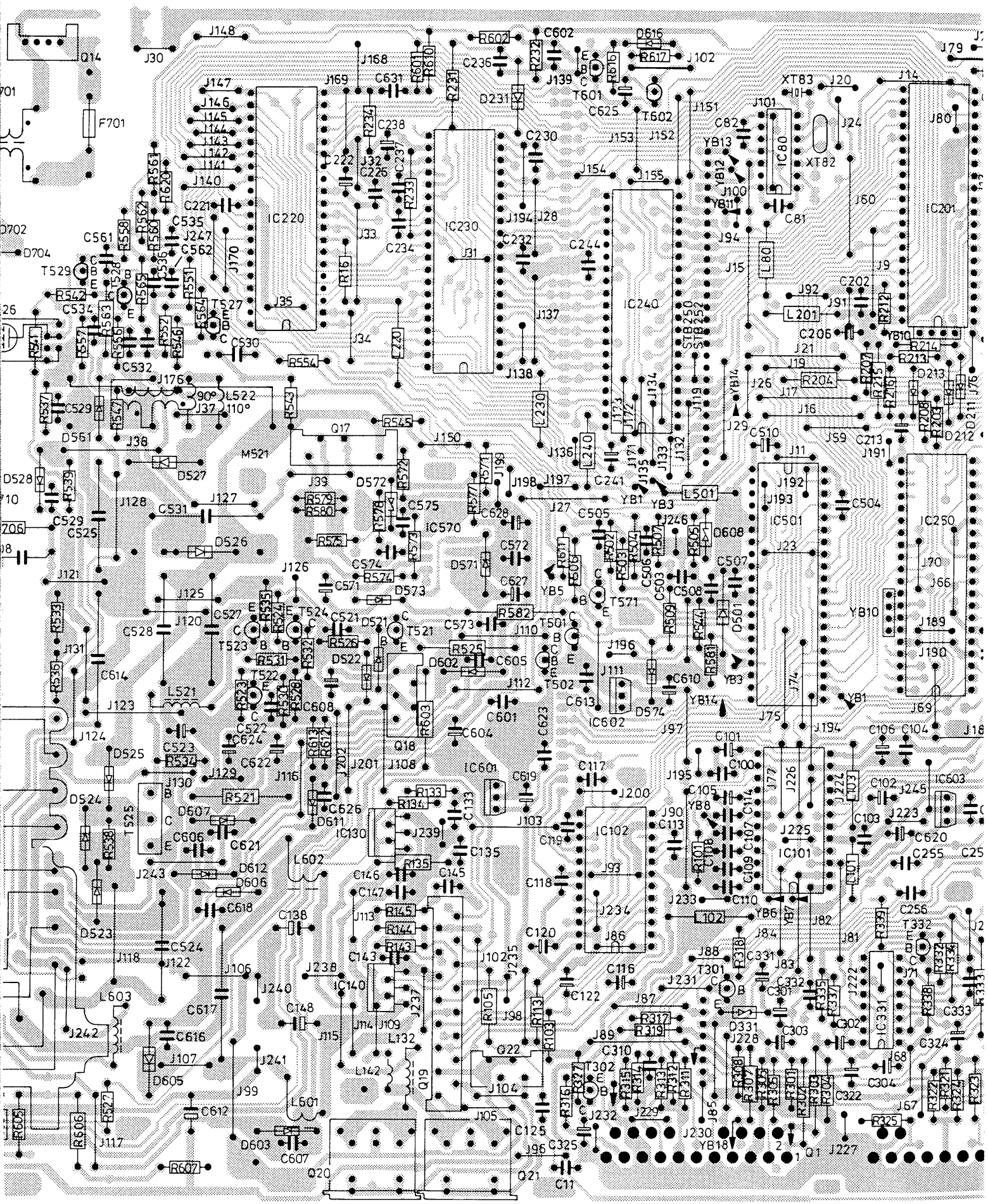
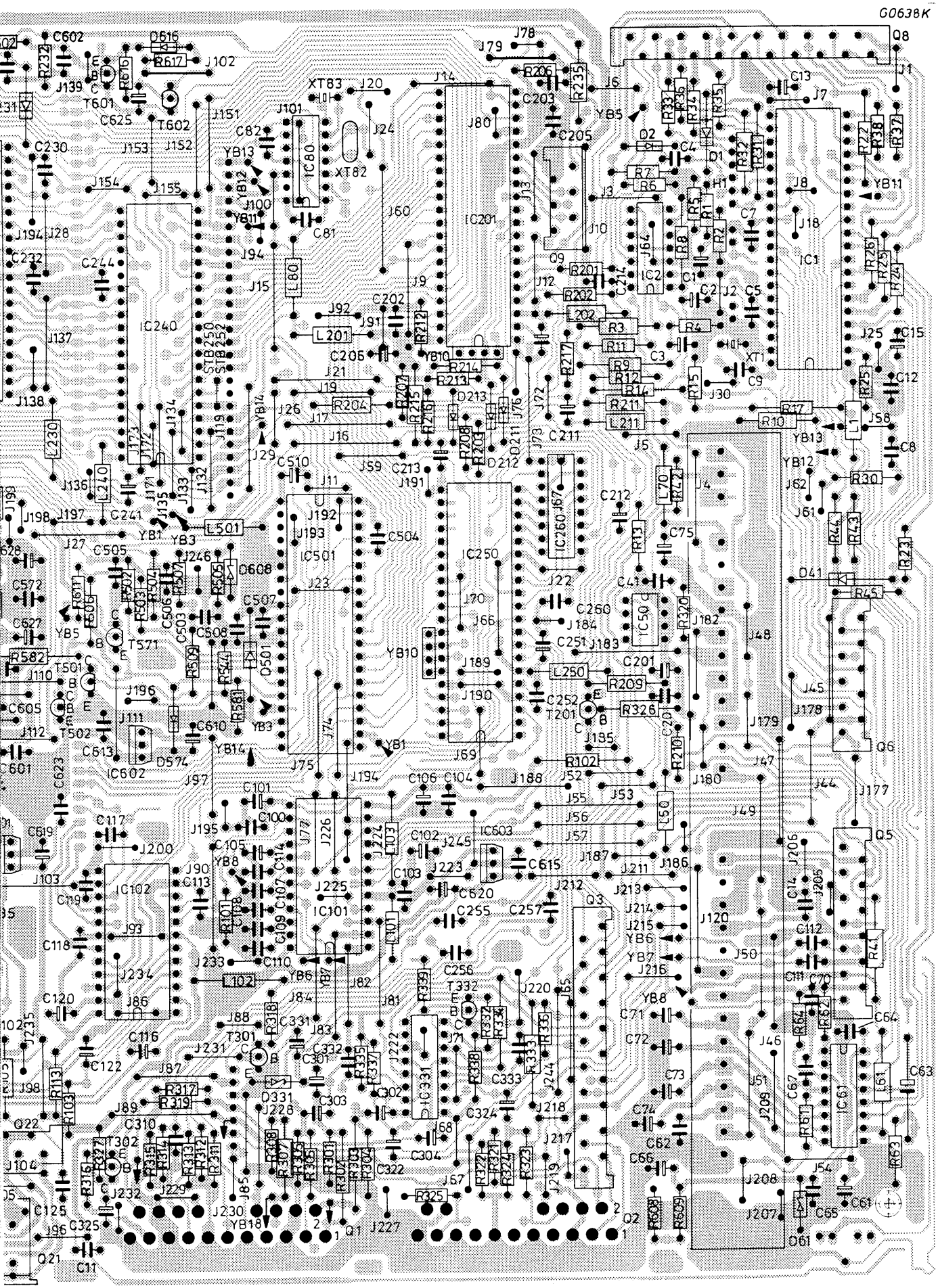


STB258/260

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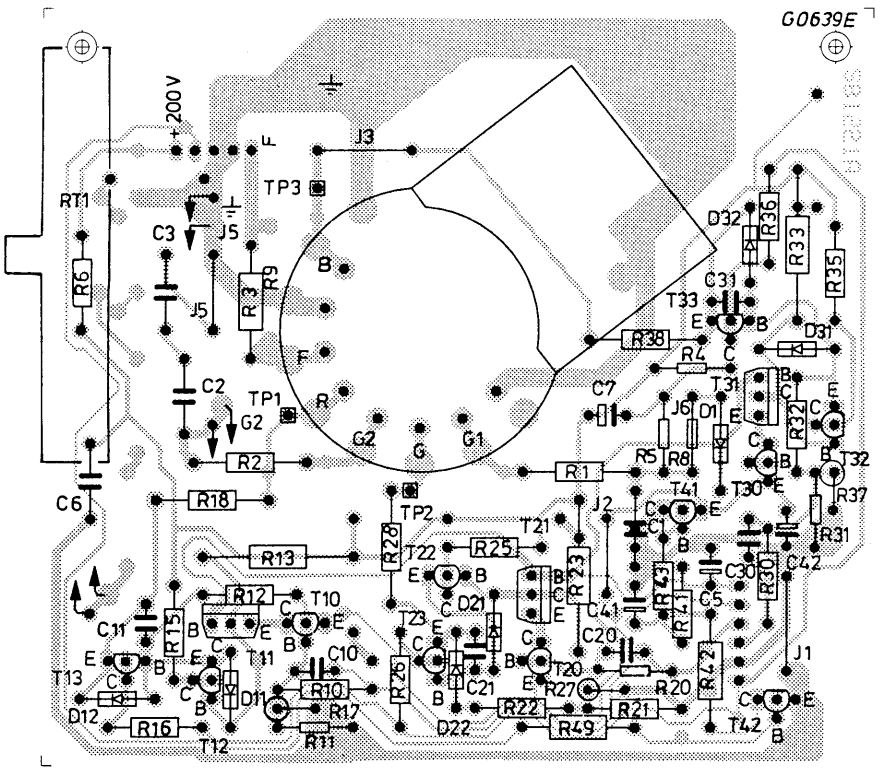
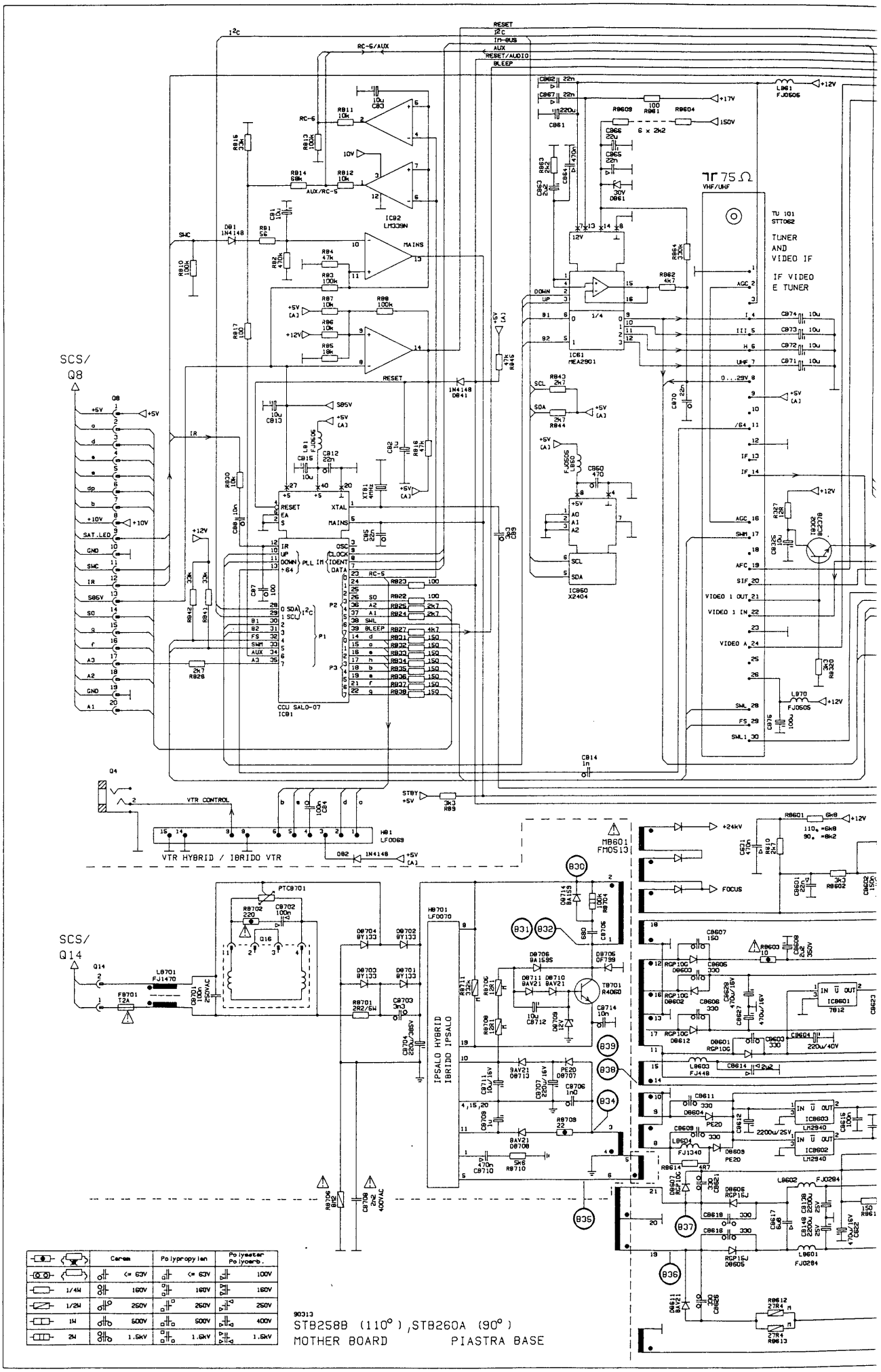
Differences on the Mother Board

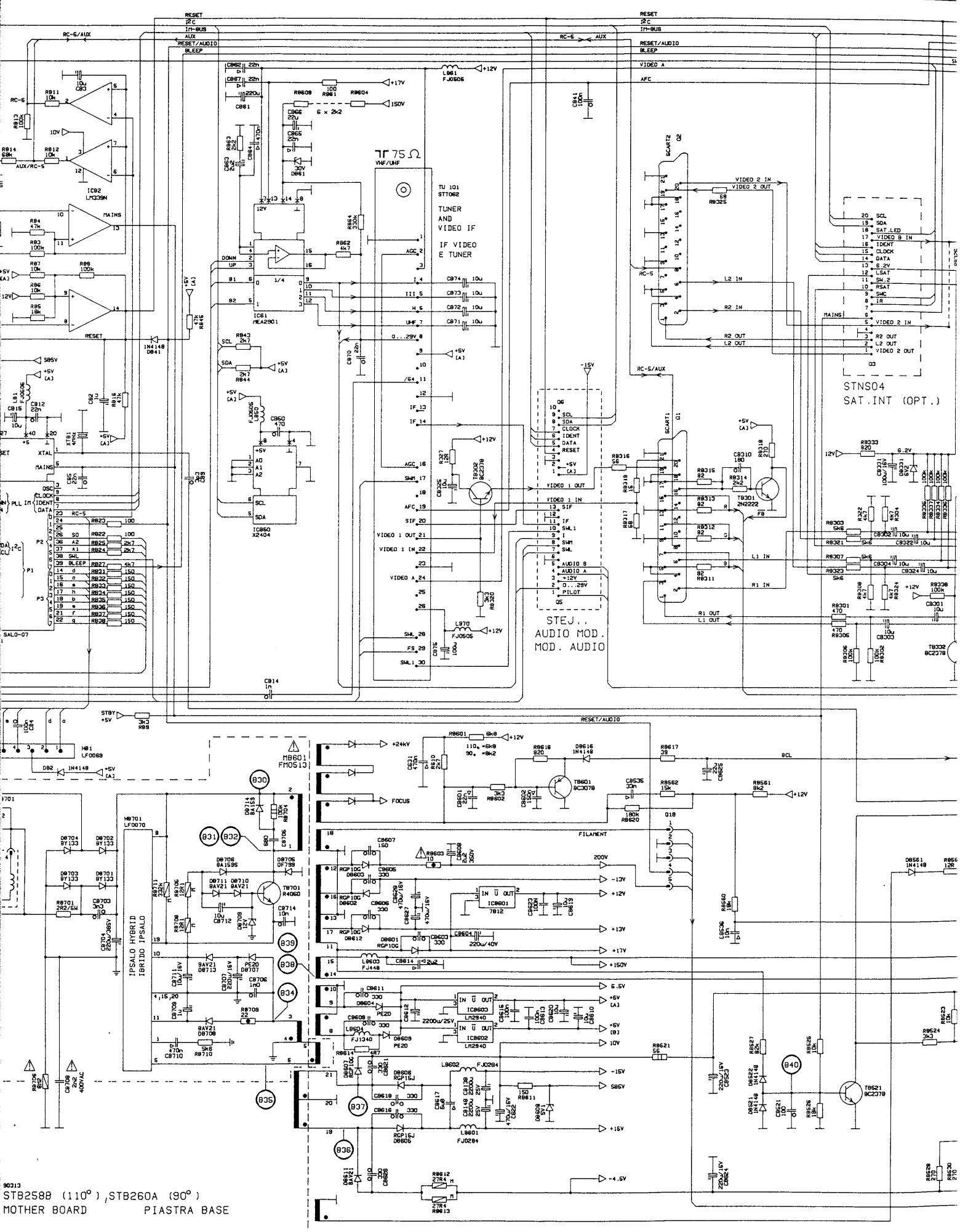
	STB 258	STB 260
C528	–	⊣⊢
J37	• •	•—•
J36	• •	• •
L522	≈	–
XT82	–	–
IC220	–	–
YB11	–	–
YB12	–	–
YB13	–	–
YB14	–	–
YB18	–	–
J229	–	–
Q15	–	–



STH180/187



	Ceram	Polypropylen	Polyester Polycarb.
	<= 63V	<= 63V	100V
1/4W	160V	160V	160V
1/2W	250V	250V	250V
1W	500V	500V	400V
2W	1.5kV	1.5kV	1.5kV


RESET
I2C
IM-BUS
AUX
RESET/AUDIO
BLEEP
RC-6/AUX
VIDEO A
AFC
TUNER
AND
VIDEO IF
IF VIDEO
E TUNER
VHF/UHF
STNS04
SAT.INT (OPT.)
STEJ..
AUDIO MOD.
MOD. AUDIO
FILAMENT
FOCUS
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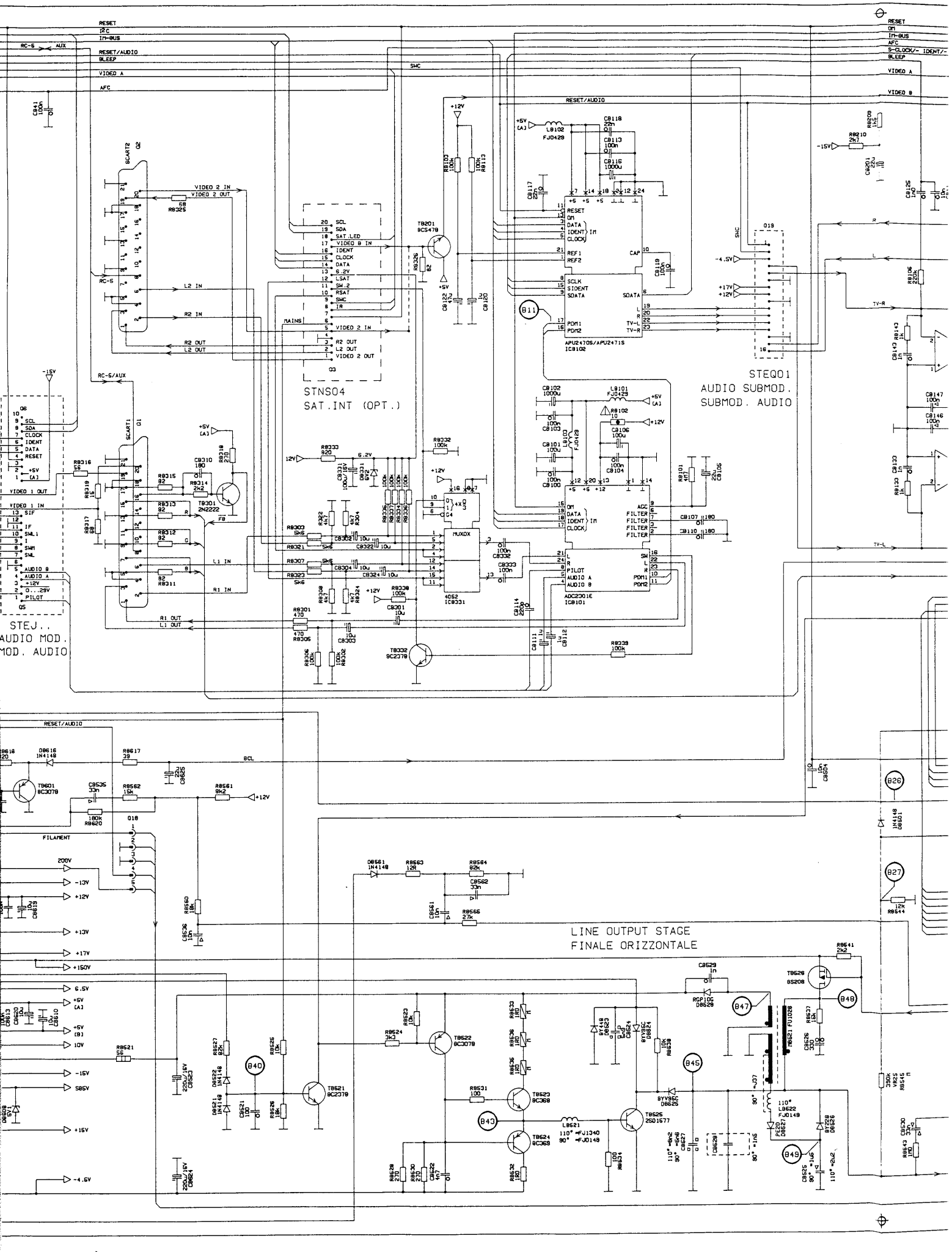
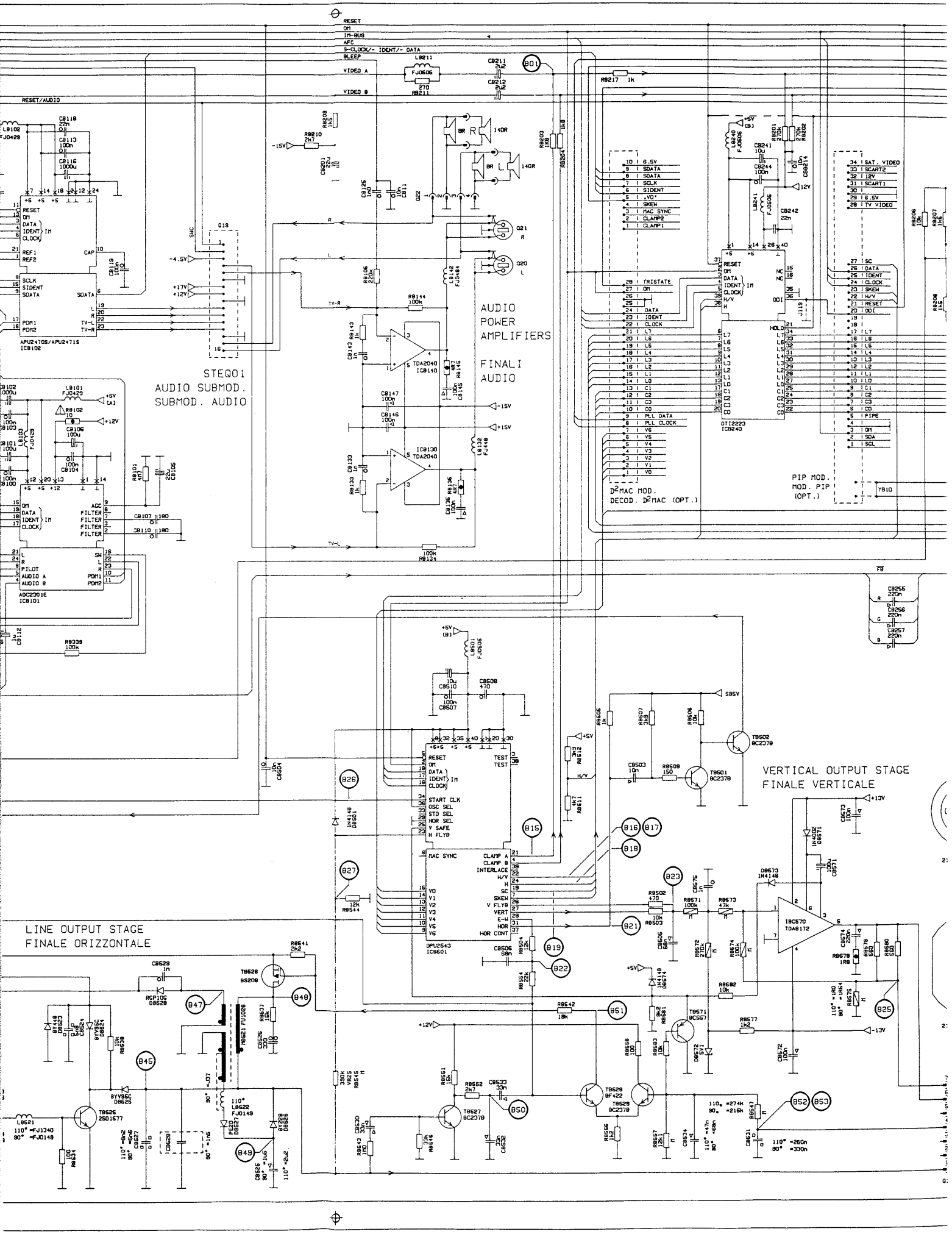
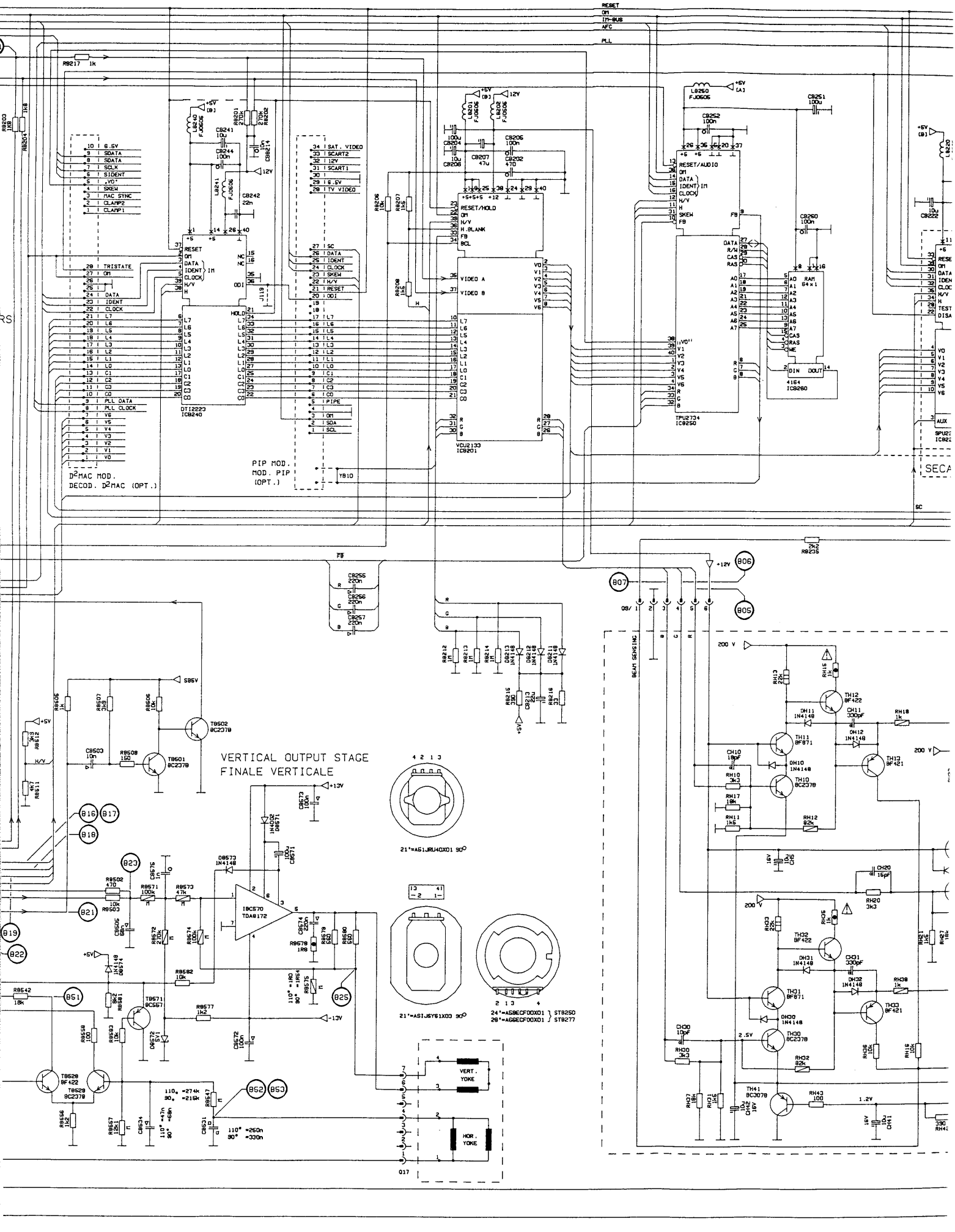
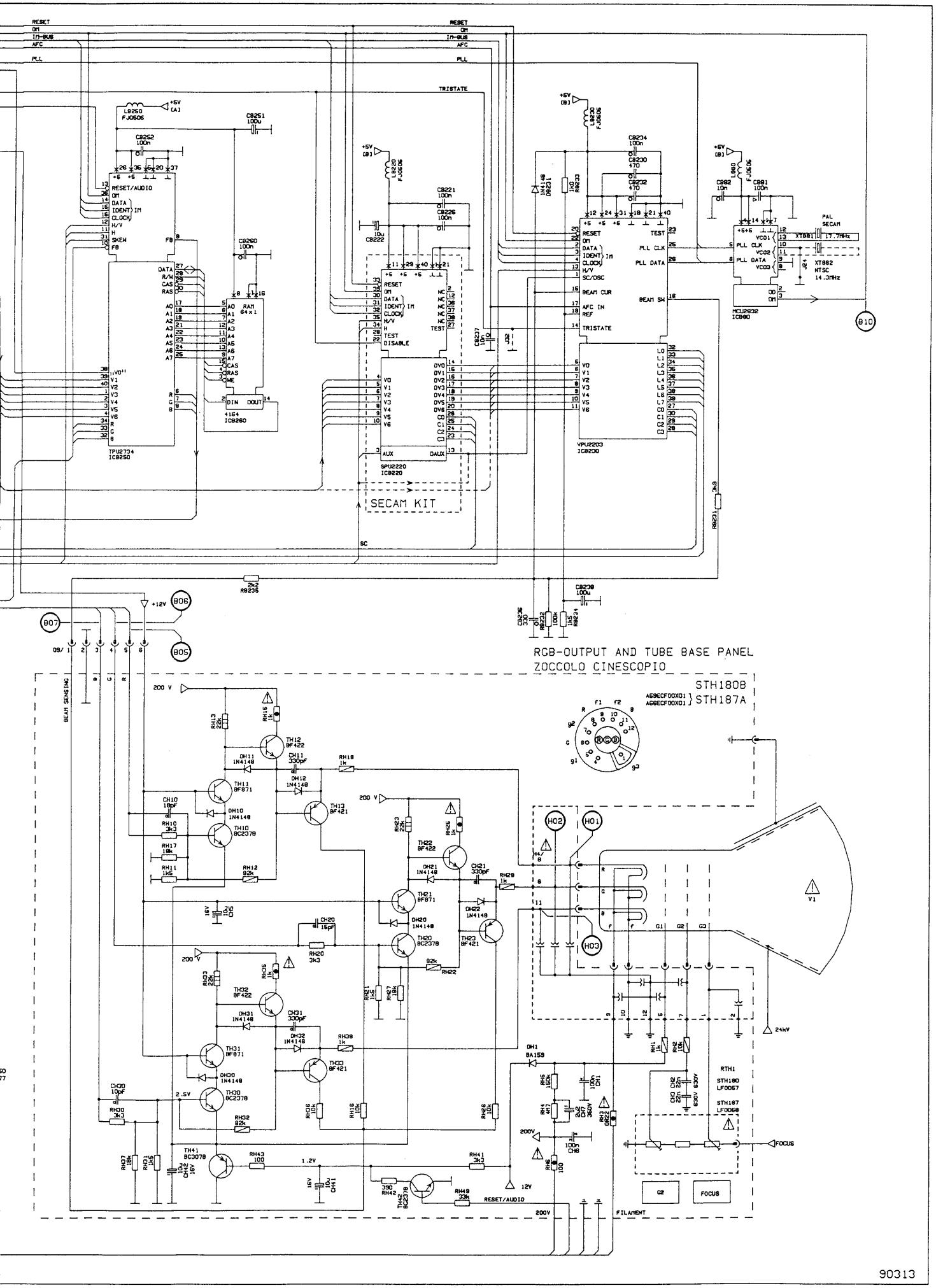
IBRIDO IPSALO
STB258B (110°) ,STB260A (90°)
MOTHER BOARD
PIASTRA BASE

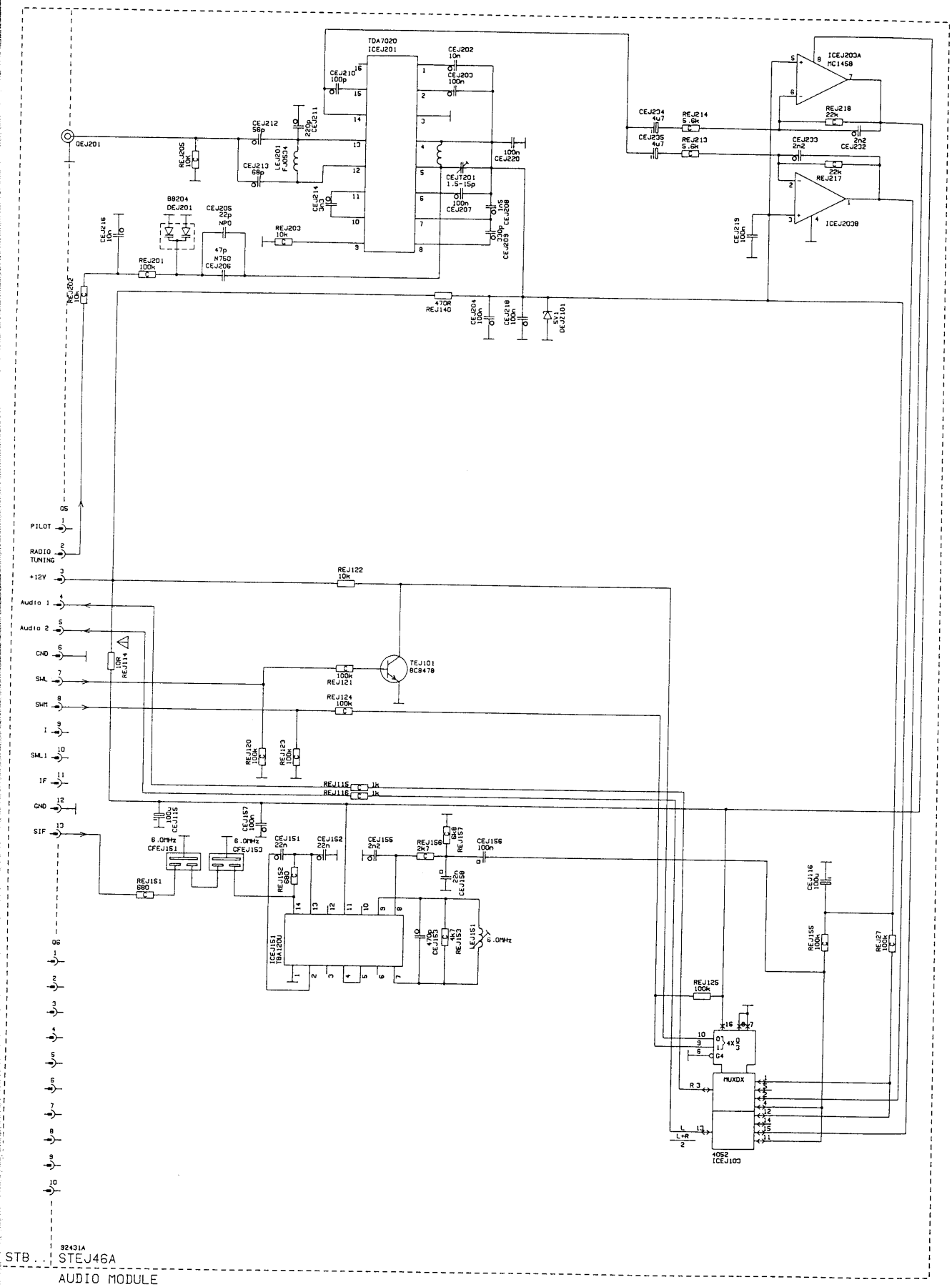

STNS04
SAT.INT (OPT.)
STEQ01
AUDIO SUBMOD.
SUBMOD. AUDIO
STEJ..
AUDIO MOD.
MOD. AUDIO
LINE OUTPUT STAGE
FINALE ORIZZONTALE
RESET/AUDIO
SCART2
SCART1
MUXDX
4052
IC8101
IC8102
APU2470S/APU2471S
ADC2001E
VIDEO 2 IN
VIDEO 2 OUT
L2 IN
R2 IN
R2 OUT
L2 OUT
VIDEO 1 OUT
VIDEO 1 IN
L1 IN
R1 IN
R1 OUT
L1 OUT
FILAMENT
200V
-13V
+12V
+13V
+17V
+150V
6.5V
+5V (A)
+5V (B)
10V
-15V
58V
+15V
-4.5V

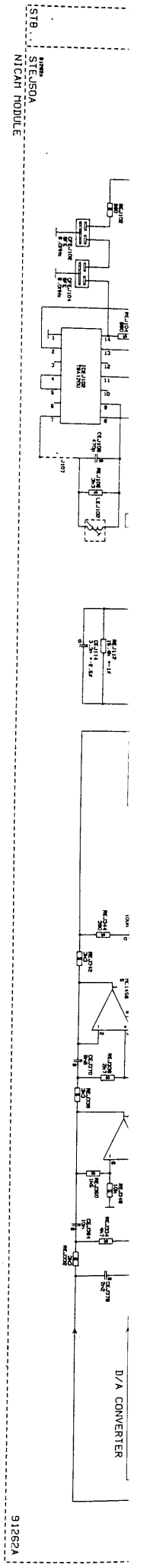

RESET/AUDIO
AUDIO POWER AMPLIFIERS
FINALI AUDIO
STEQ01
AUDIO SUBMOD.
SUBMOD. AUDIO
APU247OS/APU2471S
ICB102
ADC2301E
ICB101
TDA2040
ICB140
ICB130
TDA2040
D²MAC MOD.
DECOD. D²MAC (OPT.)
PIP MOD.
MOD. PIP
(OPT.)
DTI2223
ICB240
VERTICAL OUTPUT STAGE
FINALE VERTICALE
LINE OUTPUT STAGE
FINALE ORIZZONTALE
DPU2543
ICB501
TDA8172
RESET
DM
IM-BUS
AFC
S-CLOCK/- IDENT/- DATA
BLEEP
VIDEO A
VIDEO B
TV-R
TV-L
+5V
+12V
-15V
+17V
-4.5V
+13V
-13V
S95V


D²MAC MOD.
DECOD. D²MAC (OPT.)
PIP MOD.
MOD. PIP
(OPT.)
VERTICAL OUTPUT STAGE
FINALE VERTICALE
VERT. YOKE
HOR. YOKE
RESET/AUDIO
RESET/HOLD
VCU2133
TPU2734
DTI2223
BEAM SENSING


SECAM KIT
RGB-OUTPUT AND TUBE BASE PANEL
ZOCCOLO CINESCOPIO
STH180B
AG9ECF00X01 } STH187A
AG8ECF00X01 }
BEAM SENSING
FILAMENT
FOCUS
G2
24kV
200 V
12V
1.2V
2.5V

90313





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28M87

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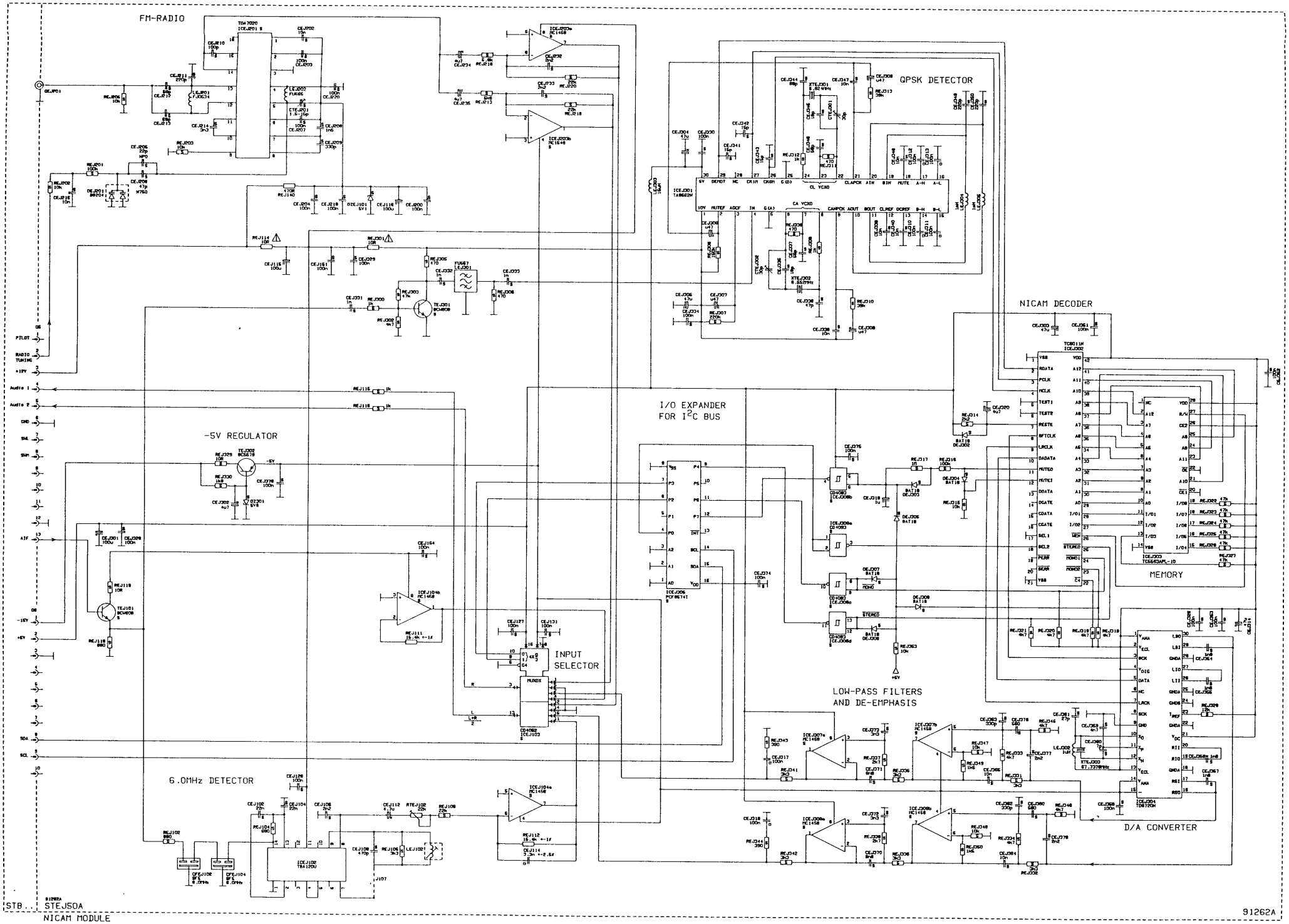
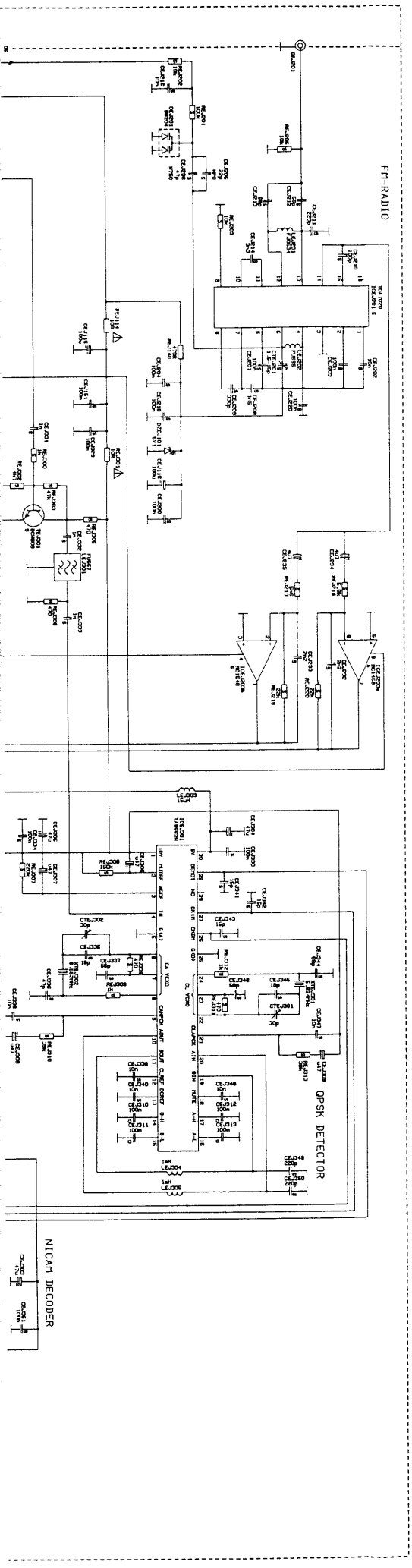
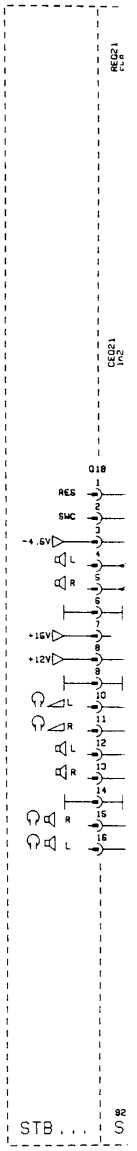
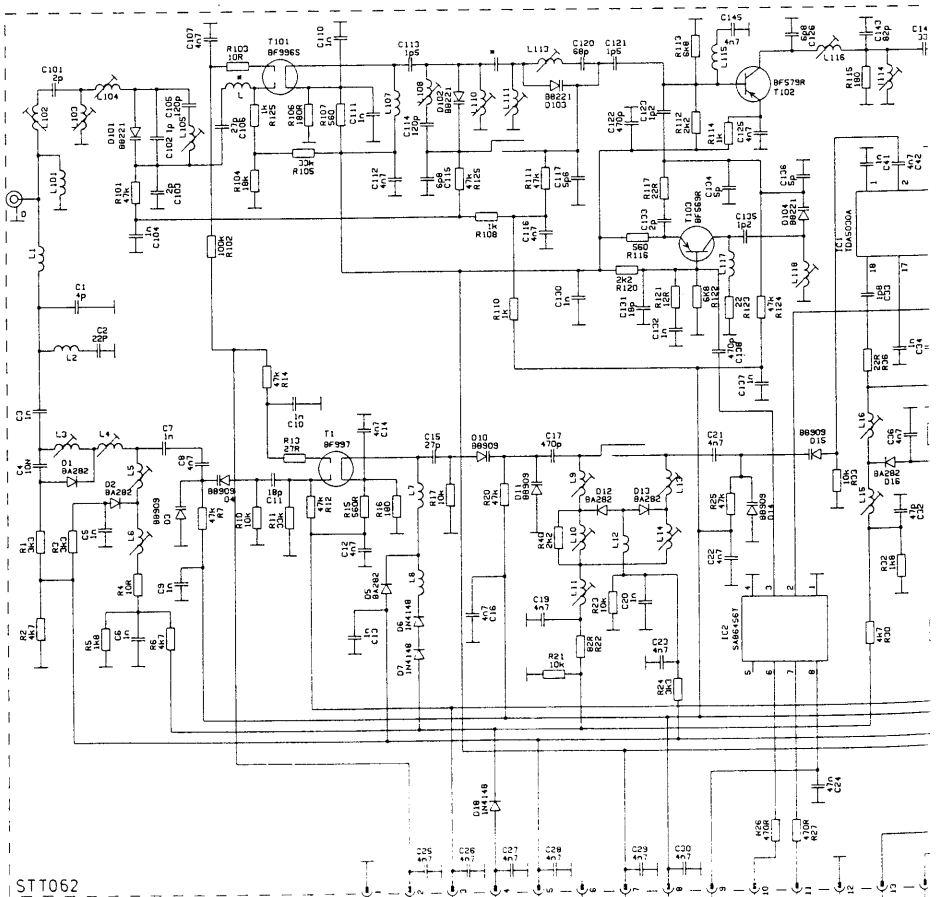
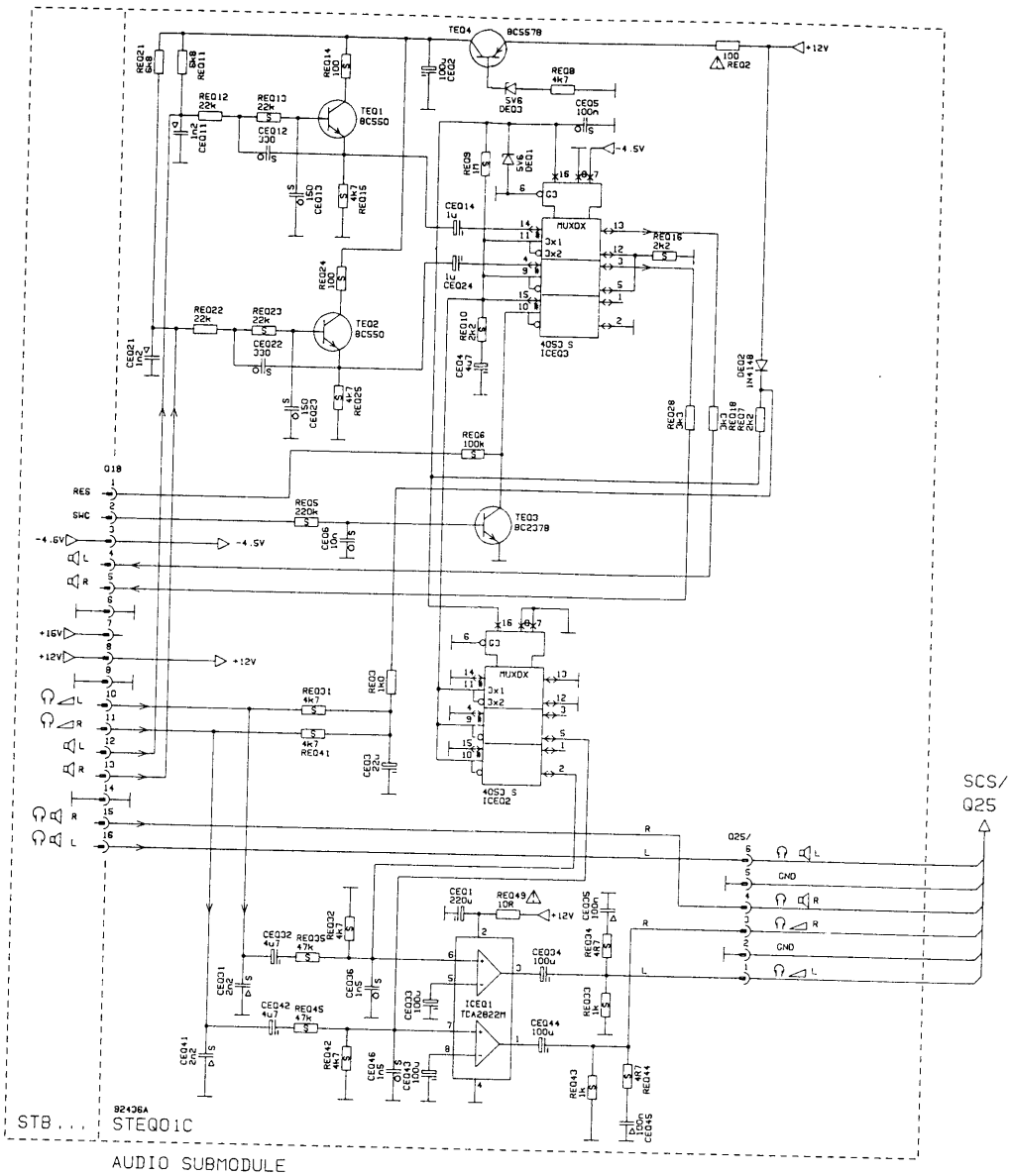

FM-RADIO
QPSK DETECTOR
NICAM DECODER
I/O EXPANDER
FOR I²C BUS
-5V REGULATOR
INPUT
SELECTOR
LOW-PASS FILTERS
AND DE-EMPHASIS
6.0MHz DETECTOR
MEMORY
D/A CONVERTER
FTLOT
RADIO TUNING
+12V
Audio 1
Audio 2
GND
SCL
SDA
AIF
-5V
+5V
STB
STEJSOA
NICAM MODULE
91262A

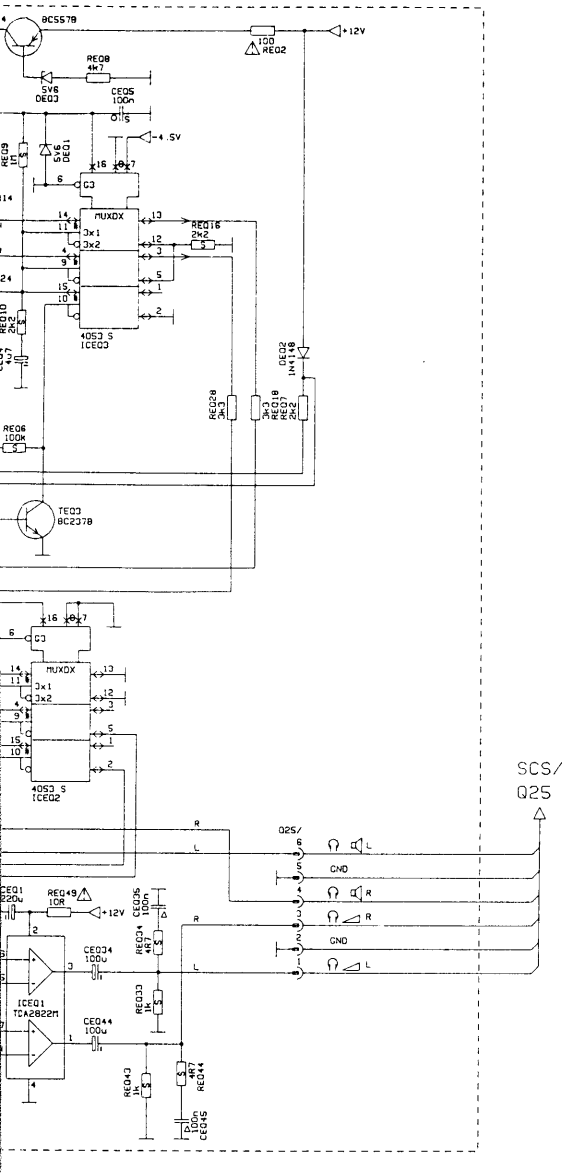


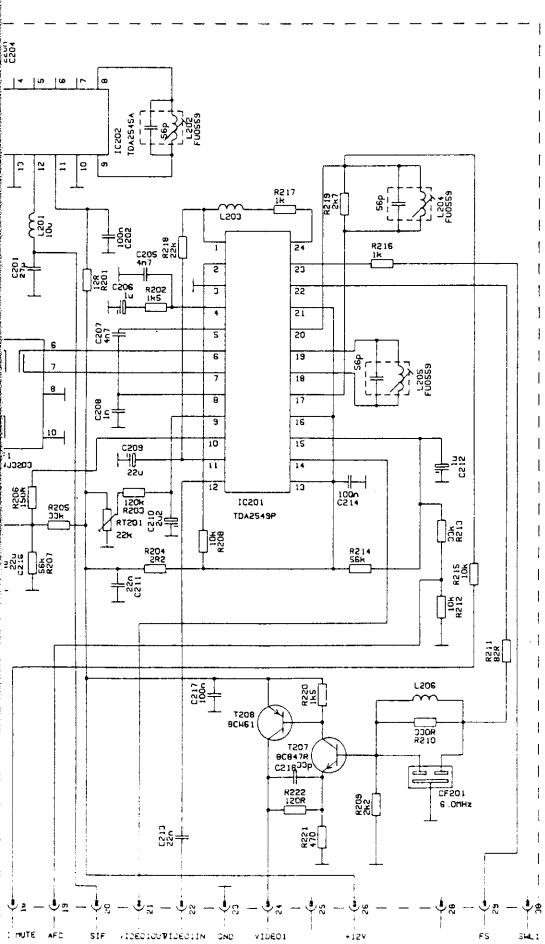


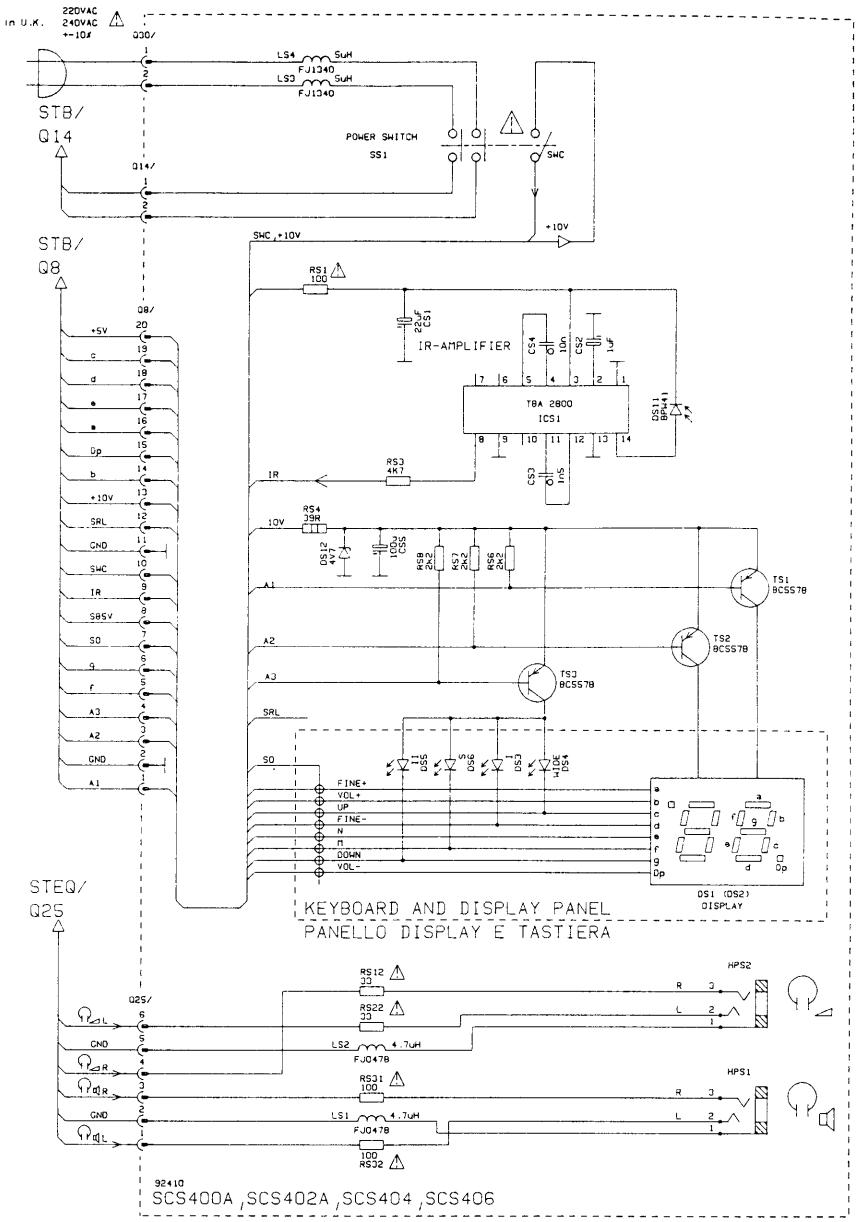


STT062
TUNER & IF AMPLIFIER
AMPLIFICATORE IF & TUNER

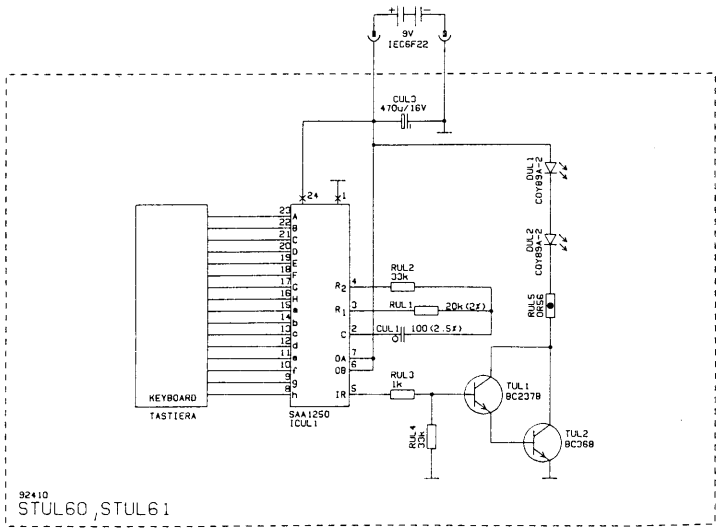

ST8...
STEQ01C
AUDIO SUBMODULE
SUBMODULO AUDIO
SCS/
Q25
STEQ
Q25







CONTROL PANEL
PANNELLO COMANDI



REMOTE CONTROL TRANSMITTER
TRANSMETTITORE TELECOMANDO